

OS/2

M A G A Z I N E

Reviews:

Clearlook 1.1

InCharge 1.1.05

KopyKat 1.0

The Mosaic WARS

WebExplorer meets
Cyberspace. Page 26

Using IBM Works
What you need to know

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directories and paths

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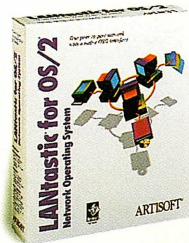
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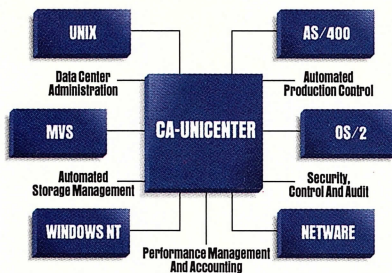
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May 1995



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OS/2 Warp 3.0's BonusPak includes WebExplorer, a multithreaded, native-OS/2 browser for the popular World-Wide Web. That's fine, as it goes, but our author argues that WebExplorer is not truly state-of-the-art, lacking much of the functionality of more mature Windows-based Web browsers. Unless IBM devotes attention to the quality of the browsing experience, WebExplorer may not survive. *By Hal Berghel*

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IBM Works, an integrated application with word processor, spreadsheet, and more, is included in the OS/2 Warp BonusPak. That's the good news; the bad news is that IBM Works is barely documented, and that's too bad, because it's actually a reasonably powerful application suite for many home and even business OS/2 users. Here's a look at IBM Works in a real-world situation. *By Lou Miranda*

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EDITORIAL POLICY: OS/2 Magazine is an independent publication without obligation to any hardware or software vendor, dealer, or distributor. Send editorial queries to OS/2 Magazine, Editorial Department, 600 Harrison St., San Francisco, CA 94107.

Postmaster

Send address changes to:
OS/2 Magazine, Circulation
Department, PO Box 56664,
Boulder, CO 80323-6664. Telephone
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Postal and Rates

Second-class postage paid at San Francisco, CA, and additional mailing offices. OS/2 Magazine (ISSN #1073-1547) is published monthly by Miller Freeman Inc., 600 Harrison St., San Francisco, CA 94107.

Domestic subscription rate for one year is \$39.95; two years, \$64.95. Canada rates for one year are \$49.95; two years, \$74.95 (payable in U.S. funds). For all other countries, the rate for one year is \$79.95 airmail (prepayment in U.S. funds). Single-copy price (U.S.) is \$7.00 plus \$2.00 postage; international, \$10.00 including postage.

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PRINTED IN THE U.S.A.

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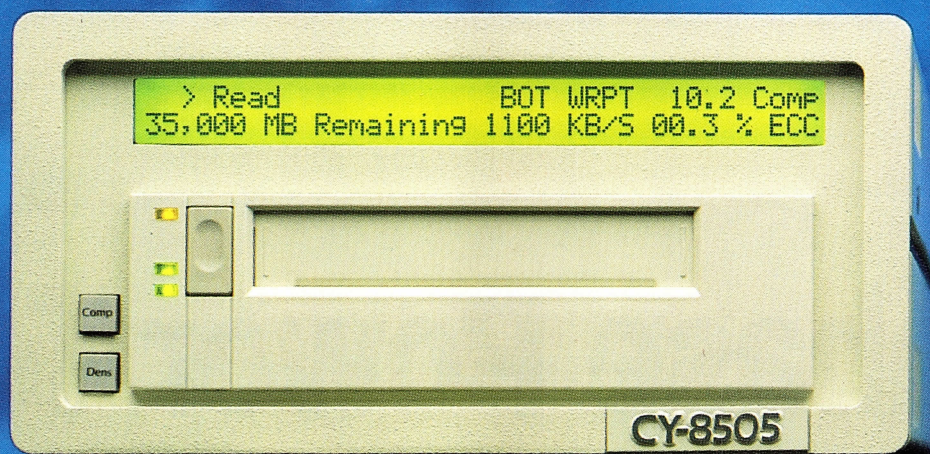
■ To find the number nearest you, dial 800-346-3247 with your modem (in Canada, dial 800-635-6225, voice only). When the modem connects, press Enter. At the Host Name prompt, enter PHONES. Follow the menus and note the number closest to you. Then hang up and dial the number you have just found.

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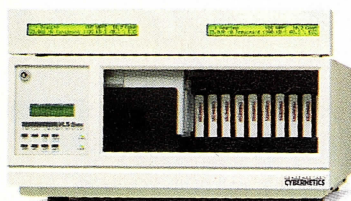
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2nd Quarter	\$611.39	14.05%
3rd Quarter	\$597.99	13.74%
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Perspectives

Outside Track

I've always wondered what it would be like to be a world-famous **PC Magazine** columnist. But while I'm waiting for Michael Miller's invitation, I really should practice...

A February 28th tele-conference call with IBM talked about their new OS/2 Warp Connect product, previously referred to as **OS/2 Warp Client Edition**. OS/2 Warp Connect could hit the shelves by early May, offering a whole slew of network requesters, **peer-to-peer connectivity**, and more (see "Dateline: OS/2," p. 11).

The color of OS/2 Warp Connect's **commercial packaging** hadn't been decided at the time of the call. So far, we have OS/2 Warp "for Windows" in a red box and "full pack" in a **nearly identical** blue box. (I'm predicting mass confusion in retail and mail-order channels.) Will OS/2 Warp Connect "for Windows" be in a yellow box, and its "full pack" in a green box? By the way, we're now up to **six separate packages** of OS/2 Warp (if you count red-box and blue-box coming in both floppy-disk and CD-ROM flavors). Well, that's one way to guarantee **plenty of retail shelf space**.

Speaking of retail space, why are software makers continuing to **reinvent the user interface**? It's not a new phenomenon, of course. Remember Borland's ill-fated ObjectVision development tool for OS/2 and Windows? ObjectVision apps didn't **conform to the CUA** (common user access) standards that most GUI users take for granted. My favorite example: round radio buttons that exhibited the behavior users learned to associate with **square check boxes**.

The initial releases of both Mesa 2 and Clearlook violate UI standards. Mesa 2 is **overly mouse-dependent**, and allows very little cell movement via keyboard. Worse, <Shift+Arrow> doesn't select cell ranges, <PgUp> and <PgDn> don't scroll vertically, doesn't work when editing cell text, and <F1> doesn't call up online help—**CUA violations all**. Clearlook uses an arrow pointer rather than the **traditional I-beam** as a text-editing cursor; keystrokes don't overwrite selected text; and <Ctrl+I>, <Ctrl+B>, and <Ctrl+U> turn on, but won't turn off, the expected character styles. Are these **variations on the CUA theme** a benefit to the end-user? Of course not.

Application users rely on their GUI's **virtual world** following predicable "laws of physics"—whether a vendor's programmer happens to like those laws or not. Of course, many **user-interface errors occur** because of insufficient testing. Other times, it's **hubris** on the part of the programmer, who feels compelled to reinvent the wheel. It's time for application developers to stop violating those **painfully learned standards** without a darned good reason.

Speaking of painful, I'm **bemused** by Lotus Development Corp.'s inconsistent cc:Mail strategy. I've been using cc:Mail for OS/2 in the office, and now that I'm **telecommuting regularly**, I asked our PC Support department to order cc:Mail Mobile for OS/2, the remote-access version, for use on my home PC. Guess what? There is **no OS/2 version**. Why not? According to the product manager, Lotus hasn't announced plans for one, because "OS/2 users can run cc:Mail Mobile for Windows." **Gee, thanks.**

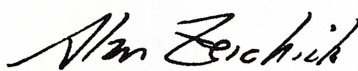
On the other hand, **genuine kudos** to the many smaller software makers embracing OS/2. To a lean, mean, entrepreneurial company, the OS/2 market looks large and profitable; to most Goliaths battling for **Windows market megabucks**, OS/2 is still far less appealing. It's also true that smaller developers, flying below the big companies' **radar screens**, seem to do the best job exploiting OS/2 with innovative applications and tools. Our "Just Announced" section has been filled lately with new developers announcing "**version 1.0**" products. It's a happy trend—long may it continue!

In other news, IBM recently announced PC DOS 7.0. This is **good news** for companies that use both OS/2 and DOS, since the new PC DOS 7.0 includes REXX support, and can read .ipf-format help files. The new DOS also includes Stacker 4.0. When will IBM add Stacker to the **OS/2 Warp BonusPak**, I wonder?

The Expensive Upgrade Dept.: I've been testing Evergreen Technology's "Rev to 486" CPU upgrade, which drops a 99MHz IBM Blue Lightning processor (486DX equivalent) in place of a 33MHz 386DX. It works great with OS/2—that **clock-tripled Blue Lightning**, with 16K on-chip cache, really flies. It's even faster than the similar Cyrix upgrade I wrote about last November ("Drop-in Turbocharger," p. 32).

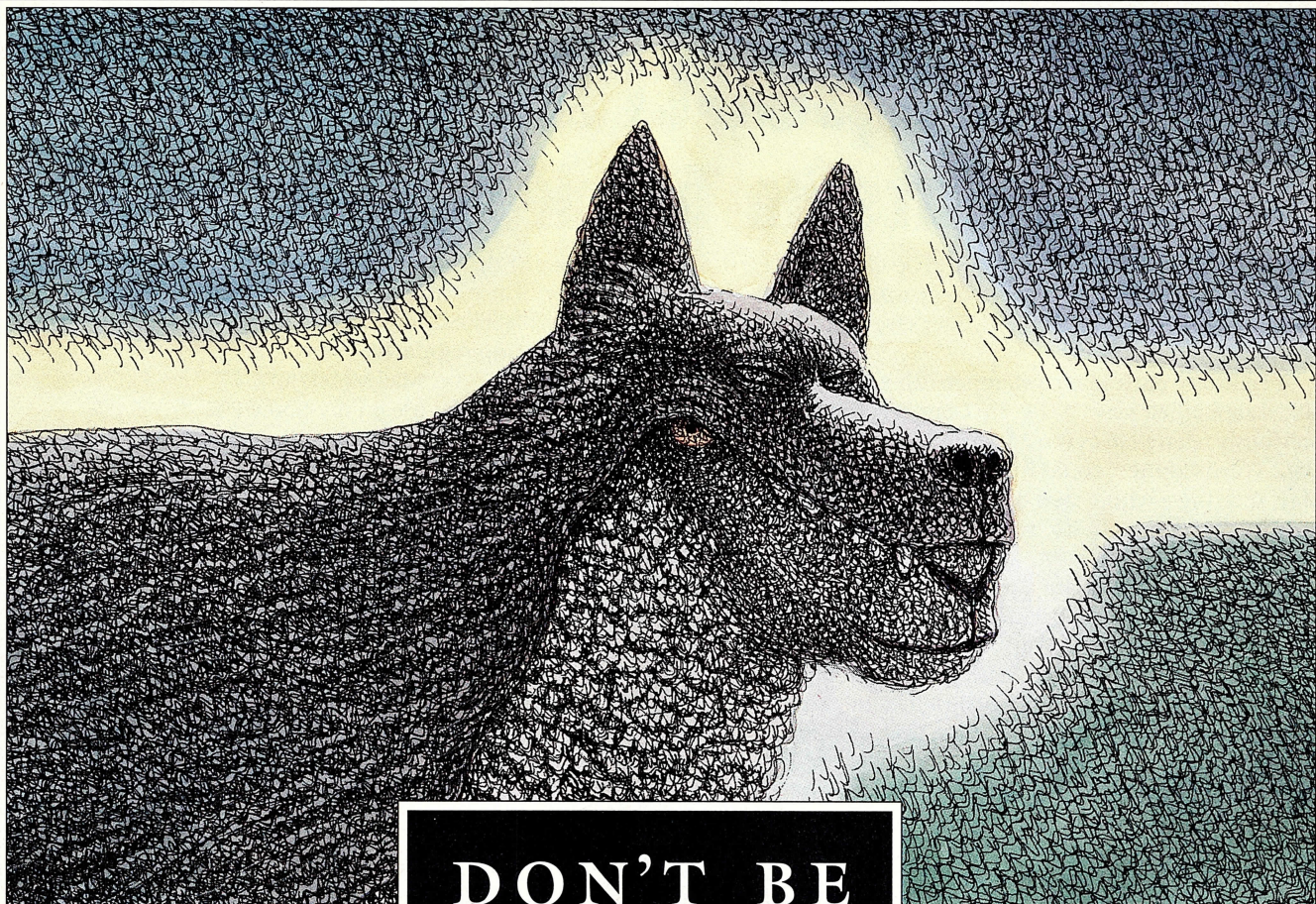
Consider, though, you'll still be using a motherboard and BIOS **designed for a 386**—and a standard ISA bus. With that in mind, the \$599 Evergreen upgrade seems pricey compared to a new 486DX4 or even Pentium motherboard or bare-bones system upgrade. Of course, large corporations might find the total cost of installing **dozens** of in-place CPU upgrades a bargain compared to large-scale system replacements. Contact Evergreen at (503) 757-0934.

Meanwhile, Pammy and I were cruising down I-5 in our Studebaker Golden Hawk... oh, sorry Michael, **wrong magazine.**



Alan Zeichick
Editor-in-Chief





DON'T BE FOOLED BY A FABLE

Posing as cutting edge just doesn't cut it anymore. But some PC-to-mainframe software companies would still have you believe that a sprinkling of 32-bit code in a 16-bit sea is the stuff legends are made of.

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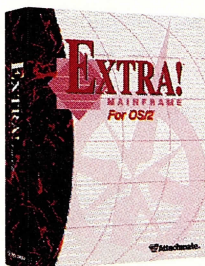
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Letters

Preditor/2 review

Dear Editor:

In Brian Proffit's review (February 1995, p.18), he wrote that Predator/2 had no provisions for converting BRIEF macros. However, I received the following information from CompuWare:

"Preditor/2 has an automated assist for converting old-style brief macros to new PEL code. The B2P executable in the CPE directory will convert old-style brief macros in LISP format to the new PEL format.

"If you have the new c format brief macros, you will need to run cb on them to convert them to LISP. Manual adjustments may still be required after the conversion. Use the following command format: **B2P briefmacro pelname.**"

Joel Seiferas

First Things First

Dear Editor:

I disagree with suggestion number six in the sidebar, "First Things First: 10 Quick Projects" (for OS/2 Warp 3.0) in the article, "OS/2 Warp: The Next Generation" (February 1995, pp. 23-39). Do not create a data folder for IBM Works data or any other software for that matter. Workplace Shell folders work best when they are created for related objects—not particular types of data objects. Put your Works data files with any type of object in folders that are organized according to how you work, as has been suggested in numerous tips in prior issues of OS/2 Magazine.

Frank Golazeski

That tip suggested that you separate the data that is created by other parts of the IBM Works package from the 14 files created by the IBMWorks PIM program in the ibmworks\data directory. Of course, none of the tips that are printed in OS/2 Magazine are absolutes—you should always organize your data as you see fit.

—Alexander Antoniadis

Dynamic IP addresses? No problem

Dear Editor:

I was a little distressed after reading the review of OS/2 Warp in the February 1995 issue (pp. 23-39). You noted that,

if you are not using Advantis as your Internet provider, you must have a permanent internet protocol (IP) address.

According to a representative at the IBM pre-sales-support line (you can call [800] 992-4777 and key in 211 to skip the introductory message), this statement was incorrect.

I know that some software packages require that you enter an address, but most Serial Line Internet Protocol (SLIP) software packages have an address that you can enter to tell it to poll the service provider. For example, with the winsock stack that I am using, you enter an IP address of xxx.xxx.xxx.255. The xxx.xxx.xxx is replaced by the IP address of the SLIP machine you dial into and the dialer will pull the IP address from the login text.

David Burelsmith

When that review was written, the Internet Access Kit wasn't as well documented as it is today. I was trying to hook up via SLIP with a dynamically assigned address. On the original slippm.exe (dial other internet providers program) the IP address was a required field. When queried, IBM technical support told me, incorrectly, that dynamic IP addresses are not supported.

Since then, a number of login scripts can read the dynamically assigned IP address and feed it to the slippm program. In addition, the IBM Point to Point Protocol (PPP) drivers don't require an IP address and I've found that they work much better than the original SLIP drivers.

At any rate, you can use the OS/2 Warp Internet Access Kit to connect to a provider that assigns dynamic IP addresses. If you decide to use the SLIP protocol, you'll need a special script. You can modify an existing script or, better yet, have your provider write one for you. If you're using PPP, just leave the IP field blank, and PPP will negotiate one when you login.

—Alexander Antoniadis

OS/2 and Windows/DOS compatibility

Dear Editor:

In the March 1995 issue (p. 7), Alan Zeichick took the computing press to task for its perceived failure to "measure all desktop operating systems with

the same yardstick." Look at the facts: OS/2 is not being supported by anything that even approaches the numbers of independent manufacturers that currently support Windows. If you are purchasing sound, video or other hardware, you can generally be sure that the newest toy will include *all* of the necessary drivers and will be relatively easy to install and configure under Windows—with no work-arounds. Most of the time, it is actually quite painless, which I cannot say about OS/2.

I have not heard of anyone who added OS/2 (in any version) to an existing machine or added hardware to a system that was running OS/2 who did not have a problem with missing or unavailable drivers, configuration headaches, or untold other quirks—some not so bad, but others that nearly crippled a system.

Mr. Zeichick further states that "the unstated supposition...is that there's no need for Microsoft to even consider OS/2 compatability." Of course there isn't. Microsoft Windows is the easiest system I have seen for novice computer users. Hundreds of applications exist and are inexpensively priced. Mr. Zachmann even stated in the same issue (pp. 17-18) that IBM is not one-hundred percent behind OS/2 as a real alternative to Windows. Their own "PC Direct mailing...gave OS/2 Warp one sixth of a page that was otherwise devoted to Windows applications."

I have finally thrown in the towel with OS/2 Warp at home. I am typing this on my home PC, which I booted from a boot disk directly into DOS and Windows. The Windows applications that migrated to Warp show degraded performance. Some applications did not migrate, even after following the procedures for adding programs to the Desktop.

If you have the time, the ability, and true patience, OS/2 (at least the 3.0 version) is the only way to go *if* one truly needs multitasking. Then again, how many of us really need it and aren't just fooling ourselves? Most people only do one thing at a time. So what if my computer does the same?

Phillip Slater, Jr.
via e-mail

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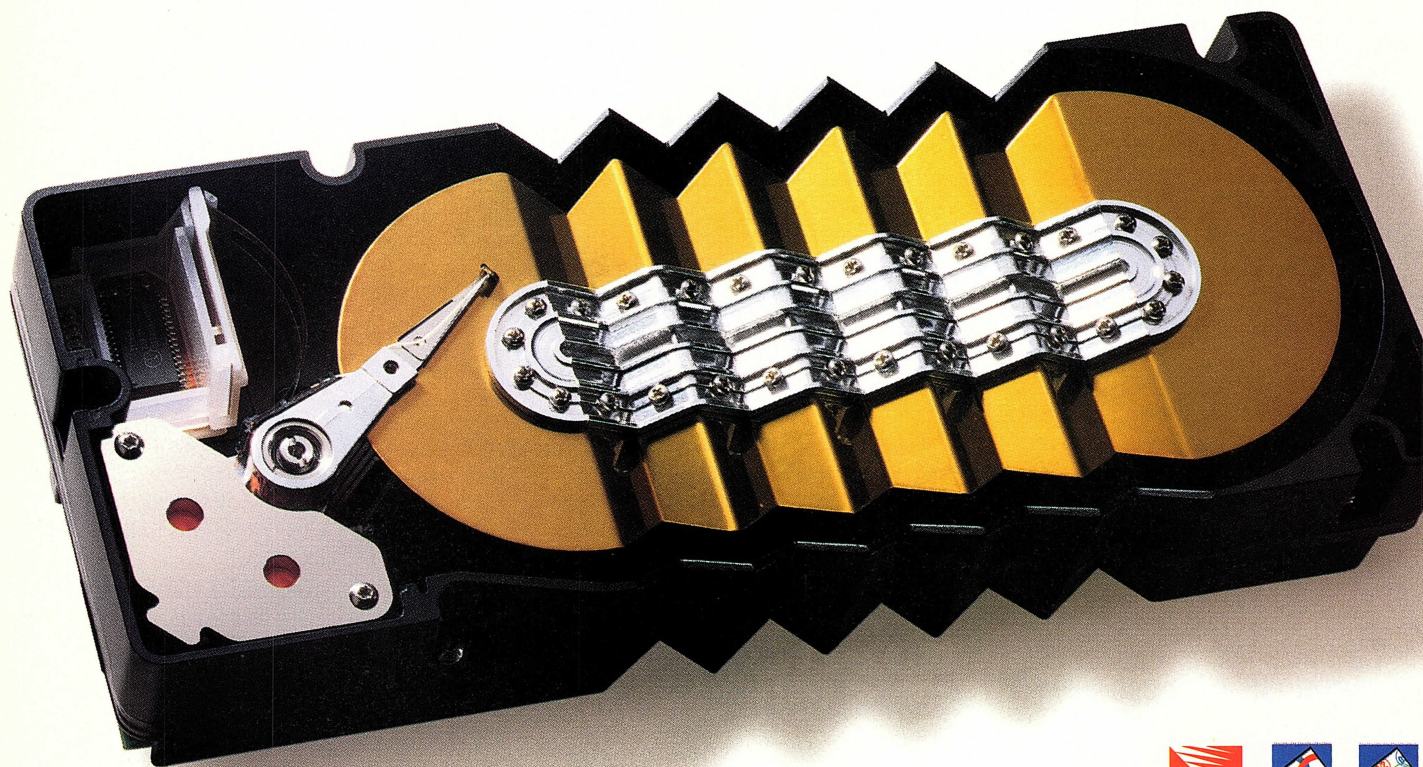
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Full Packing and Connecting

**OS/2 WARP "FULL PACK" IS RELEASED
AND OS/2 WARP CONNECT IS ON THE WAY. BY ALEXANDER ANTONIADES**



IBM finally released the long anticipated "full pack" of OS/2 Warp five months after the release of OS/2 Warp 3.0. It includes the Win-OS/2 code that enables you to run Windows programs without having to install the Windows operating system software. The only visible difference between the previous version of OS/2 Warp and the new "full pack" version is a blue binding on the box and the words "includes DOS and Windows application support." The old OS/2 Warp boxes have red bindings and the words "Enhances your existing DOS and Windows." I hope the salespeople at Egghead and CompUSA see the subtle difference between the two packages.

The wordy title "OS/2 Warp including DOS and Windows application support" indicates the exact nature of the product, but, for the sake of brevity, we will refer to it as the "full pack."

IBM broke with their tradition of keeping code at the same level in "for Windows" and full pack versions of OS/2. According to IBM, the new OS/2 Warp full pack contains many fixes to bugs that have plagued OS/2 Warp. The fixes will be made available to OS/2 Warp "for Windows" users in the near future.

This release offers no new functionality, but it does provide a couple of new device drivers (for MediaVision's 508B Soundcard and the Canon BubbleJet series of printers, for example) and miscellaneous fixes, such as the ability to support the DMS floppy disk compression that Microsoft uses in most of its new products.

Bonus unpacked

It is good that IBM included some code enhancements in this release, but what is surprising is the updated code that they *didn't* include. Since its initial release, IBM has offered updates to some of the programs that were included with OS/2 Warp—both in the base product and in the Bonus Pak. Unfortunately, IBM didn't include these updates in the full pack, despite the fact that some of them had been out for more than two months.

A perfect example was the CompuServe navigation tool, OS/2-CIM. When OS/2 Warp was released in October 1994, OS/2-CIM 2.0 was included as part of the Bonus Pak. Users who hadn't updated to OS/2 Warp couldn't buy the utility because CompuServe wasn't satisfied with the 2.0 version, so they held on to it, promising that a 2.0.1 version with some special utilities would be released in "mid-November."

Well, the months dragged on and by February, CompuServe had not released a new version of OS/2-CIM. What was worse was that they hadn't even updated an automated message that promised delivery by mid November. In mid February, CompuServe finally released OS/2-CIM 2.0.1 (dated January 27) without the data-management utilities that they said had been responsible for the delay.

With this history of broken promises and customer dissatisfaction, which version of OS/2-CIM do you think IBM included in the full pack? If you guessed the five-month-old OS/2-CIM 2.0, you win a cookie. Feel free to eat it

while you're downloading the 1.5MB OS/2-CIM upgrade file.

Let's give IBM the benefit of the doubt and say that the full pack was already on its way to manufacturing when OS/2-CIM was being prepared and IBM didn't want to delay the full pack. That doesn't explain why a patch that Hilgraeve released for HyperAccess Lite, another Bonus Pack application, in January, wasn't included in the new Bonus Pak.

The most embarrassing omission was IBM's own update to the Klondike and Chess games. The versions of these games included in the original OS/2 Warp package were basically rolled over from OS/2 2.1. IBM, at about holiday time, in a burst of seasonal good cheer, revamped the two games with multimedia sounds. These versions were created with OS/2 Warp in mind and even said so in the "about" box. But, two months later, the OS/2 Warp full pack was released with the old versions of the games. It's true that none of these programs make or break the value of OS/2 Warp, but it does raise a disturbing question: If we know that these programs were overlooked, what was missed that we didn't see?

IBM didn't overlook the Internet Access Kit. Updates to the dialer, UltimaMedia Mail/2 Lite and NewsReader/2 programs are included, in addition to the newly finished Web Explorer 1.0. The Internet Access Kit includes Point to Point Protocol (PPP) support that has been in gamma since December. It seems clear that IBM is placing Internet access at a high priority.

Regardless of IBM's decision not to

How to update your Bonus Pak

All of the updated programs that were mentioned in this article, except OS/2-CIM, are available via Internet FTP in the `/pub/os2/warp/patches` directories of both `ftp.cdrom.com` and `hobbes.nmsu.edu`. OS/2-CIM 2.0.1 is available directly from CompuServe by typing GO OS2CIM. The updated version of HyperAccess Lite is also available from Hilgraeve's BBS at (313) 234-0247 or Hilgraeve's FTP site `ftp.hilgraeve.com`. The updated versions of the Internet Access Kit software can be downloaded by using the Retrieve Software Updates program in the IBM Internet Connection folder.

update some of the software and even though the boxes of these two versions of OS/2 Warp look alike, OS/2

2.x users can take this opportunity to upgrade. The list price of the upgrade is \$129. For new users, the price of OS/2 Warp 3.0 "full pack" is \$199. Call (800) 342-6672 or contact your local IBM representative.

Warp Connect

On February 28, 1995, IBM announced plans for the product that was previously referred to as the LAN Client. The new version of OS/2 Warp for users who are connected to LANs will be called OS/2 Warp Connect. It will only be available on CD-ROM, but you can create floppy disk images from the compact disc.

The most significant new feature in OS/2 Warp Connect is IBM's new peer-to-peer networking features. The peer services in this release include sharing of files, printers, clipboards, and support for NetDDE. This protocol will connect to LANtastic 6.0, Windows for Workgroups, Windows NT, and LAN Server.

Network drivers that have not been

available with OS/2 will be included in the OS/2 Warp Connect package, including the Novell Network Requester, IBM's LAN Server requester, and an enhanced version of IBM's TCP/IP for OS/2. The TCP/IP support will be equivalent to the current TCP/IP for OS/2 base kit with enhancements (PPP dial-up support, for example) that were added to the Internet Access Kit.

In addition to network support, a couple of new templates have been added to the existing OS/2 Warp templates that come with the regular Notes Express package. LAN Distance, an IBM product that provides dial-up access to a LAN, and a new network sign-on coordinator that allows you to use one password to logon to multiple networks, have also been added.

IBM anticipated that they would release the Win-OS/2 version of OS/2 Warp Connect in late April or early May with a "for Windows" version to follow shortly thereafter. Pricing was not available at press time.



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The Great Equalizer

**BEING AHEAD OF THE TECHNOLOGY CURVE
CAN MEAN GETTING AHEAD IN BUSINESS.** BY AMY D. WOHL



One thing has clearly contributed to the giant surge in the growth of small offices (home-based or otherwise): the advent of the personal computer and other electronic technology. Cheap electronics make company size much less of an issue and allow even one-person shops to appear as professional and as well-connected as large businesses.

In fact, small new companies can make decisions at the front of the technology curve without the baggage of legacy hardware, generations of software, and layers of bureaucracy. Small companies today can choose new technology more quickly and completely than much larger and more prosperous firms.

The operative words are *can choose*. Historically, small businesses have been fiscally conservative and slow to invest in new technologies. Enormous gaps are growing between the most aggressive small businesses that are leveraging the use of technology to eliminate size disadvantage and those who fail to see the advantages of new technology or are actively hostile to it.

Personal computers are the most important part of the small-business technology trend, but they go hand in hand with other microprocessor-based technological advances, for example, telephony, imaging, printing, and communications. Rapidly declining costs are an important part of the picture. Small businesses, especially new one-person enterprises, couldn't have made these advances if prices hadn't declined during the 1980s and 1990s.

A minicomputer used to cost \$50,000 or \$100,000, but you can now buy a personal computer for only a few thousand dollars. Fax machines that

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once cost \$5,000 are approaching \$500 and color printers for less than \$1,000 are available in every office-supplies store. A microprocessor-based programmable mini-switchboard with multiple lines, voice mail, and support for a growing small company is just a few thousand dollars. Low costs mean that, for less than \$5,000, a home office can be equipped with basic components and a small company can be set up for \$10,000 to \$20,000, depending on the number of employees (assuming that no special devices or custom-developed software are needed—those could cost significantly more).

Computers are getting less expensive all the time. Small companies can buy more for their budget dollars—either more powerful computers or additional systems. Most companies opt for more power, but both choices could be appropriate in the right circumstances.

Operating systems are becoming more powerful and easier to use, making them more accessible to small-office users who work with minimal support. Operating systems vendors (for example, IBM) are trying to attract users to products (such as OS/2 Warp 3.0) by bundling extras (for example, the Internet on-ramp and application software). Free software is a powerful inducement to small companies who are more budget-conscious than larger organizations. We expect that other vendors (such as Microsoft) will follow IBM's example and offer extras with their next offerings. (Apple already bundles Claris Works with the purchase of a new Macintosh.)

Several software-bundling deals are being announced for a variety of reasons—usually in the interests of both vendors and certainly to the benefit of many customers. Lotus and IBM recently announced that a future version of OS/2 Warp will include a copy of Lotus Notes Express, a special version of the Notes client. A small company could choose to become Notes users by buying only one copy of the full Notes client/server software that can act as a server and provide an environment for application development.

New technology is changing the way large companies do business and is allowing small companies to produce big-company results in a number of ways:

- Large firms are downsizing and using telecommuting as a way to cut costs. In doing so, they are moving to the same kinds of virtual teams that small firms, which employ free lancers, use all the

The Big Picture

time. Small firms, which are likely to be more specialized and more concerned about their particular client relationships, may, in some cases, have an advantage.

- PC hardware and software is priced so that small firms can buy the same tools that large firms use, so small firms have no buying disadvantage at all. We can all use Lotus 1-2-3, WordPerfect, or CorelDraw.
- New technologies bring tools to the office desktop that were previously not available to small offices at reasonable prices. These new tools are, of course, also available to large organizations, where they represent savings in cost and time. Large companies, however, didn't have to do without them in the past, they just had to be willing to pay the bill.

Some of these developments are now familiar enough to not seem so new, even though they are only 10 years old. We have already reaped the

benefits of desktop publishing. Incredible new libraries of clip art, photographs (20,000 photographic images in Corel's new 200-CD Stock Library), and music will soon be joined with libraries of animation and tools. Amateur authors will be able to change our entire notion of what a presentation looks like.

Inexpensive scanners and cheap memory with increasing storage capacity will allow even the smallest office to store all of its important documents—even those generated externally on paper by customers and suppliers—within its system. It will make data impossible to lose and easy to be shared by a distributed work force of freelancers who extend the small organization's size and capabilities.

With cheap communication connections and a place for businesses to meet electronically (perhaps on the Internet), small businesses will be able to move directly into the cyberbusiness world of the 21st century on equal footing with giant firms who are actually struggling to change their

Amateur
authors will be able to
change our entire
notion of what a
presentation looks like.

infrastructures and attempt to integrate technology. Inexpensive hardware and standard software is a great equalizer and smart small companies are using them to build profitable businesses.

Amy D. Wohl is president of Wohl Associates, a consulting firm specializing in office information systems, personal computing, and end-user computing. She is also editor of the Trendsletter, a monthly newsletter on computer industry trends.



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Is Customers' Choice Returning to Preloads?

THE DAYS OF THE "FREE" OPERATING SYSTEM ARE NUMBERED. BY WILLIAM F. ZACHMANN



Bundling DOS and Windows with new personal computers has become such common practice in the past few years that one is tempted to assume that it has always been that way and always will be. Such bundling is, however, a relatively recent practice and one that is likely to change significantly in the next year or so. Customers will soon have more choices when it comes to what operating system they get—if any—with new computers. If they don't *need* a new copy of an operating system, they shouldn't have to pay for one. That is good news for customers, and it is good news for OS/2 as well.

If you are only familiar with what has happened in the PC industry since the early 1990s, you might think that PC vendors have always provided DOS and Windows for "free." The truth is, it wasn't until shortly after the introduction of Windows 3.0 in May, 1990 that Windows was bundled with nearly every system sold.

Inclusion of MS-DOS or PC DOS with systems became common practice in the late 1980s. The addition of Windows 3.0 and 3.1 in the early 1990s built upon and extended that practice. That was not, however, the way it began with IBM-compatible personal computers or the way it was for most of the 1980s. What's more, there's now reason to assume that such bundling will continue.

When the IBM Personal Computer was first introduced in 1981, DOS was

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not bundled "free." It wasn't even the only operating system offered. Three different operating systems were available for the original IBM Personal Computer. In addition to the IBM Personal Computer Disk Operating System (PC DOS), IBM offered the UCSD p-System (with Pascal or FORTRAN compiler) and in 1982, CP/M-86.

When you bought an IBM personal computer in the early 1980s, you didn't get free software. You chose which of the three alternatives you wanted and paid for it directly. DOS was clearly the most broadly supported operating system from the beginning. It was also the most attractively priced. At the time, DOS cost \$40, which included interpretive BASIC. The UCSD p-System cost \$625 and was packaged with either a

Pascal or a FORTRAN compiler. CP/M-86 had a price tag of \$240.

It was no accident that DOS was not bundled "free" with the IBM Personal Computer. To tie the sale of one product to another was forbidden to IBM by the 1969 modification to the Final Judgment of the Consent Decree, which IBM had agreed to in a 1956 settlement of an earlier anti-trust suit against IBM by the U.S. Department of Justice. Back in 1981, IBM was in the midst of acrimonious litigation of yet another anti-trust suit that had been ongoing for more than a decade. The last thing IBM wanted (or could afford) to do was anything that would violate the Consent Decree. Bundling an operating system with the IBM Personal Computer would surely have done so.

In 1983, when Compaq introduced the first IBM PC-compatibles, DOS clearly was already the standard operating system. Compaq, therefore, licensed DOS from Microsoft, as did nearly all other IBM-compatible vendors that followed. All vendors, however, sold DOS separately from hardware. Only late in the 1980s, when direct mail order vendors such as Dell, Northgate, Zeos, and Gateway began to take market share, did bundling DOS "free" by computer specialty dealers such as Computerland become common practice.

One cannot be sure, because the details of the various contracts between system vendors and Microsoft are not public knowledge, but it looks as if

"Free"

Microsoft operating system software will most likely cease to be the only option.

Microsoft took specific actions, beginning sometime in 1989, to promote aggressively bundling of DOS and Windows by system vendors. Two motivations are likely in addition to Microsoft's obvious interest in increasing revenue from system vendors in any way possible.

The first motivation appears to have been a response to the first real threat of competition for DOS. In the late 1980s, Digital Research Inc. (DRI) made a serious effort to promote DR-DOS to system vendors as a low-cost alternative to MS-DOS. DRI had developed a significantly more capable product than Microsoft's and offered to replace MS-DOS with DR-DOS at lower cost. Initially, they got a very positive response from system vendors.

The second motivation was that Microsoft clearly wanted to establish Windows as a successful platform with a large installed base. During the 1980s, Microsoft Windows, which was first announced in 1983 and shipped (two years late) in 1985, had not even managed to sell one million copies in all versions. Microsoft knew that Windows would have to do much better if it was to become a serious contender in the marketplace. Windows 3.0, which was under development, finally looked good enough for broader acceptance, but Microsoft needed a way to get more copies into use.

The solution (Microsoft's way to kill three birds with one stone) was to offer system vendors attractive low-cost deals. Vendors would be licensed to provide both DOS and Windows "free" with their systems, as long as they

agreed to do so with *every* system they sold. By tying the sales of DOS and Windows together, Microsoft increased their revenues, shut out the threat of competition from DRI, and ensured that millions of copies of Windows would be given away in a sort of massive razors-and-blades strategy. Their plan was to pick up more revenues later in upgrade sales.

Vendors had agreed to pay Microsoft royalties for every system sold bundled with "free" DOS and Windows. Of course, they had to pay whether or not they actually shipped each system with Microsoft operating system software, but they could offer DOS and Windows, which certainly had some perceived value to customers, without any incremental costs. Before long, nearly everybody was doing it.

Of course, that was precisely why the U.S. Department of Justice finally decided to file an anti-trust suit against Microsoft. Their per-CPU contracts and tie-in of sales of DOS and Windows are blatant violations of U.S. anti-trust laws. Whatever the final outcome is of the anti-trust actions, it seems certain that Microsoft will not be permitted to continue to offer or require per-CPU contracts with system vendors or tie sales of operating system products that have dominant market share to other products. As a result, "free" Microsoft operating system software will most likely cease to be the only option.

Legal constraints on Microsoft, however, are only one reason that you are likely to see a return to separate pricing of operating systems. Microsoft's own growing proliferation of operating system alternatives is another reason. Even before Windows NT and Windows 95, Microsoft had bifurcated Windows bundling into Windows 3.1 and Windows for Workgroups 3.11, trying to use the latter as a way to add value to customers and, temporarily, to create additional incompatibilities with OS/2.

Windows 95's probable limitations (the amount of resources required and backward compatibility for DOS and 16-bit Windows applications) create more serious issues for system vendors,

resellers, and customers. Many people have already expressed concern about being forced to migrate prematurely to Windows 95, and some have expressed a preference retaining their option to continue to use Windows 3.1 for some time—perhaps indefinitely.

Windows NT remains a distant also-ran on the desktop. The somewhat slimmer 3.5 release seems to have stimulated some renewed interest and is certainly an alternative that at least some of Microsoft's most dedicated customers would prefer to have.

Of course, OS/2's popularity is increasing, as is interest in a variety of other operating systems for IBM and compatible personal computers. Various UNIX-related alternatives, such as Sun's Solaris and Linux, are getting a good deal of attention from users lately. In addition, vendors, such as Novell and possibly Apple, may join the fray.

The apparently normal condition of the past few years of DOS and Windows being bundled "free" with nearly every system from nearly every vendor, when viewed in a historical context, can be more clearly seen as an anomaly that is due to specific conditions, but one that is not likely to continue. Legal constraints on Microsoft, Microsoft's own multiple choices, and, of course, growing success for OS/2 and rising interest in other alternatives add up to a near certainty that one year from now, automatic bundling of DOS and Windows is likely to be well on its way to becoming history. Customers will have the option of choosing the operating system they want and will pay directly for what they get—and they can expect to pay less if they take a system without any operating system at all.

Will Zachmann, a well-known computer-industry analyst, is the founder and president of Canopus Research, based in Duxbury, Mass. He is also a former vice-president for corporate research of International Data Corp. You can reach him on CompuServe at 76004,3657, or on his popular CANOPUS forum.



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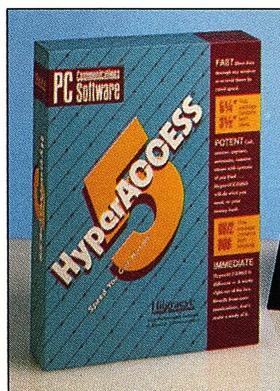
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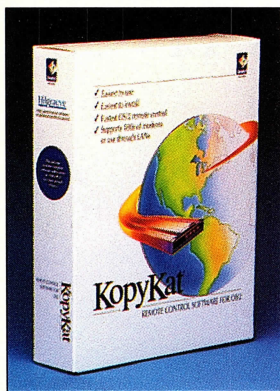
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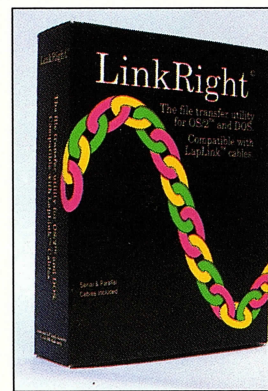


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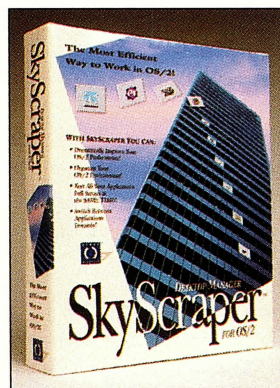
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Mainstream aspirations

A FINANCIAL PLANNER FOR OS/2
AND A NEW WORD PROCESSOR. BY BRIAN PROFFIT



InCharge 1.1.05

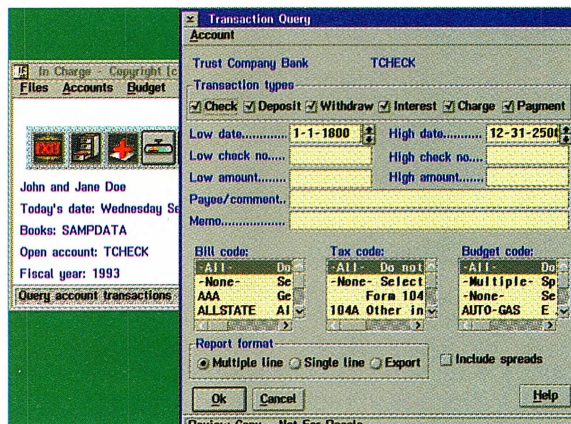
OS/2 options continue to grow as yet another application category is extended with a native application. People who use products such as Quicken and Money, have long bemoaned the dearth of OS/2 counterparts for financial management. Spitfire Software jumped in with InCharge (they inflate your financial ego by abbreviating it to InC), a 32-bit OS/2 application that includes tools to help you convert from your existing management software.

Readers may be familiar with Spitfire as the publisher of Personal Finances for DOS (for which migration tools are, naturally, provided). Company president Bruce Landeck now reports that "Spitfire Software views the future of desktop computing to be OS/2 and is concentrating its resources and skills on that environment." Welcome!

All the basics are covered

InC is composed of seven integrated functions: account management (bank accounts, credit accounts, and brokerage accounts), budget management, bill management (including check printing), insurance management, property management (which can double as a household inventory system), securities management, and tax management.

If you move to InC from another financial-management package, InC can directly read Quicken files, or files from any program that supports the .qif file format. InC doesn't support securities well, so you might have to migrate them manually. On the other end, InC



shares data with CheckFree, TurboTax, and all programs that support the .txf file format.

All accounts are one of three basic types: current asset (what you have—or don't), credit asset (what you've loaned), or credit liability (what you owe). Fourteen sub-types of these three types are predefined, such as a checking account. In addition, each account can be flagged as a brokerage or tax-deferred account. Receivables and payables are tracked with reminders that pop up when things are due. Although they are linked, by default, budget categories and tax categories are separate entities. That provides greater flexibility than packages that combine them. Categories that the government chooses to put on the itemized deductions form might not necessarily correspond to the ones you want to track.

Assigning categories is one of several areas where the user interface needs touching up. The list box that shows tax categories is quite complete, matching the United States tax forms closely. But the control is too narrow, making

it necessary to scroll horizontally to see what is in the list. Spitfire has plenty of screen real estate available to expand this feature and make it more usable. The problem is even more noticeable in the transaction-entry dialog, where list boxes for the bill code, tax code, budget code, and transfer account are extremely narrow. Don't panic, InC defaults to the correct entry for these boxes in many cases, so you don't have to worry about specifying every parameter for each check you write.

Designed for power users

This product is clearly meant for the computer-literate. The hierarchical indexing of items in the home inventory seems reasonably logical if you have a lot of experience with computers. Newcomers who are looking for an easy way to use a home computer for such functions, though, will likely consider such items as *cottage.bdrn.guest.lamp1* a little too esoteric for their tastes. How many people keep all of their files in the root directory because it's easier than remembering a string of backslashes? A lot. The Workplace Shell addresses this problem visually with folders. I'd like to see InC find a visual way to address its structure.

Similarly, the use of sub-categories and group codes can bring on a cascade of tiered names to be typed with codes that take on the look of Internet addresses. That approach is great for the power users, because it allows a lot of flexibility through the use of question mark and asterisk wildcards to select entries. Newcomers, though,

One of the things I like about OS/2 is the feeling that your computer isn't limiting your options

might find it intimidating and complex. I'd like to see the documentation do a better job of explaining the basics to beginners. Many of these features are optional, so beginners don't need to be concerned with them. Other features should have a simpler counterpart for people who want to use them, but don't want to get to that level of complexity.

I would like to see them improve the documentation to better indicate the power of the product. When you enter a new budget category, for example, you might well want to pick a value and have the program propagate that value across all months without having to type it 12 times. A little investigation reveals that clicking on a pushbutton, cryptically labeled Develop, allows you to instruct InC to perform this action. You won't find that procedure in the documentation, though. In fact, the Develop button brings up a dialog that also allows you to enter a single number for the year and have InC automatically divide it by 12 and apply it to each month. In that dialog, you can also adjust the budget figures based on a percentage of their current amount, or a percentage of actual expenditures. That's a lot of valuable functionality to be hidden away!

OS/2 exploitation

One of the things I like about OS/2 is the feeling that your computer isn't limiting your options, particularly with the High Performance File System and its support for long file names. You can work with meaningful descriptions instead of cryptic codes. That might be why I find the preponderance of areas that require one-to-eight character codes, which are found throughout

InC, frustrating. It starts to feel as if everything is limited to eight characters or is composed of *a.string.of.codes.like.this*. I wouldn't give such a limitation a second thought in a DOS application, but it is an annoying characteristic for an OS/2 program.

On the other hand, InC exploits OS/2 well by not setting any arbitrary limit on the number of accounts, transactions, assets, or liabilities that are tracked. InC also takes advantage of multiple threads to a large extent. So large, in fact, that during installation, you will be asked if InC can raise the **threads** parameter in your *config.sys* file to allow 128 more! I even had a problem importing existing records from another financial program until I added still more threads beyond the incremental 128. I'm not complaining about the use of threads—that's what we bought OS/2 for, right? But, I'd like to see the parameter set properly on installation.

I'm glad that InC supports OS/2's color and font palettes. Spitfire included their own color-change options as well, but it's important that all OS/2 applications use the basic structures so users can see a consistent interface for common functions.

Other goodies

Spitfire is less America-centric than many software vendors, allowing currency conversions from as many as 10 secondary currencies and exchange rates in addition to your OS/2 default. It also supports international date formats. In addition, you can run on a fiscal year that is different from a calendar year.

The Cash Flow Analysis and Budget Status reports are particularly helpful. They provide detailed outlay information, as well as a view of how well you are sticking to your budget and your projected year-end expenditures and their variance from your budget. Many other excellent reports are included, which is great. Television, however, has created such a visual society that I'd like to see them add graphs to the picture. Nothing is quite like a pie chart for dramatically showing that a larger chunk than you could possibly eat from a real pie just disappeared into your mortgage.

The ability to set a reserve amount is

handy for accounts that are subject to service charges if the balance drops below a certain level. The balance that is shown for that account will not include the reserve amount, so you are less likely to accidentally drop your balance below the charge level.

Spitfire is very responsive to comments about their product that are made on-line. However, I'm surprised that they haven't taken this on-line awareness to the next logical step: automatic updating of asset values. I'd like to see an option to automatically dial in to a service, such as CompuServe, at a specified interval to retrieve current quotes on securities and update their value in the database.

Mileage is certain to vary

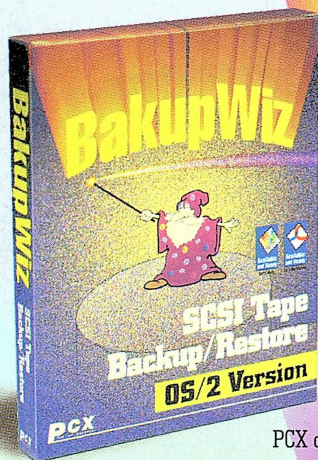
One of the advantages of dealing with a smaller software company is that they can respond more quickly to problems. Instead of waiting and lumping together fixes once a year, Spitfire makes them available on a nearly continuous basis. When you register InC, Spitfire immediately sends out a disk that contains all known fixes for the current level of the product. Any time you report a problem, they respond with another disk—sometimes in as few as 24 hours.

That means, however, that the problems I've talked about in this column will probably already have been fixed by the time this story reaches you. In addition, updates to the user interface might already have been made. Unfortunately, in doing so, a new bug or two might have been introduced, but such things happen. This policy may make it difficult for reviewers who want their story to match the product, but it is certainly good news for users.

Glee or flee

InCharge 1.1.05 is the first public release. It has a lot of abilities and shows a lot of promise, but it is still a first release. Much can and should be done to the user interface and documentation and, therefore, InC is not yet ready for the casual user.

The level of its abilities, however, is quite high. It's certainly a usable product for power users who are willing to apply a little more effort. Further, Spitfire Software has been extremely responsive to suggestions made in the



BackupWiz™

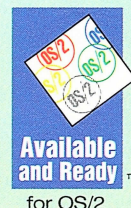
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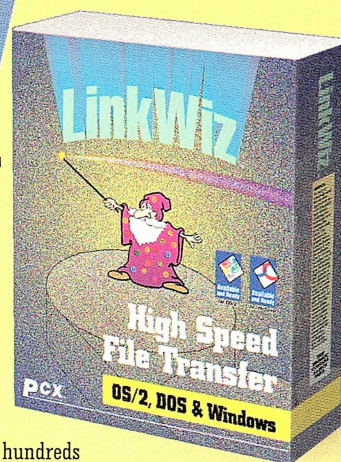
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on-line services and I'm confident that the product will continue to evolve.

Clearlook 1.1

Clearlook Corp. bills Clearlook 1.1 as "The Cellular Word Processor." To test this statement, I loaded it onto my notebook and took it to a park to see if it performed well in a wireless environment. I detected no difference between Clearlook and other word processors in its handling of wireless conditions.

They later clarified that the name had nothing to do with portable telephones. It refers to the fact that text, graphics, and so on, are placed on the page in defined areas, which are called cells. Clearlook chose a fancy name for a technique that users of DeScribe and many other products (that often refer to them as frames) will instantly recognize as the current method for nudging word processors over into the desktop-publishing realm.

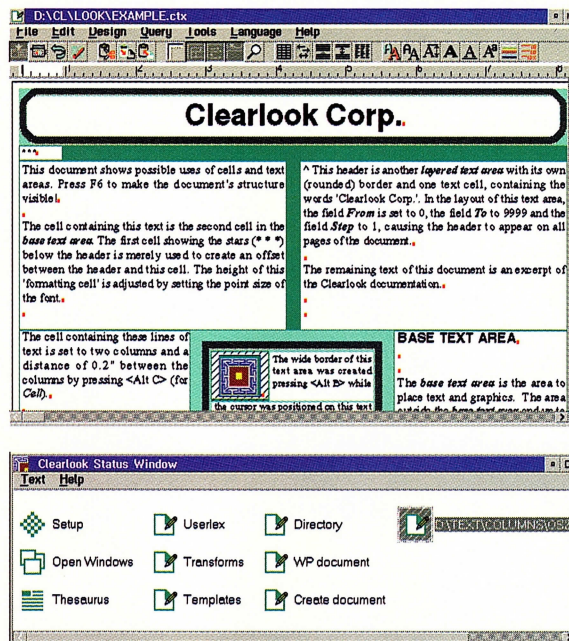
Native OS/2 application power (mostly)

Performance was surprising for a native 32-bit application. For example, when I inserted text in the middle of a document, I found that, as I moved to a blank line between paragraphs, the succeeding paragraph didn't always move down a line for two or three seconds on a 25MHz 486. That's probably a reasonable trade-off, though, to keep performance snappy in other areas. The cursor kept up with my keystrokes easily at all times, even during destructive backspace operations—an area where many word processors can't keep the screen updated.

Scrolling was another matter, though. Holding the cursor <Up> or <Down> keys caused a single line to be propagated the length of the screen during long scroll operations. That makes it impossible to tell how far you've gone. I suppose the program can scroll much faster that way, but if I were looking for maximum speed, I'd use the <PgUp> and <PgDn> keys instead of

the arrows, which I use for more precise control.

You can feel the power of a well-written OS/2 application in other ways,



though. For example, after changing the number of columns in a document, the text was rearranged almost instantaneously. Printing, naturally, takes place in a separate thread.

Clearlook has a new object called Userlex. It serves as the user's additional dictionary for the spell checker, but also allows the establishment of word abbreviations. For example, Userlex has a default entry that automatically expands the letters cl (when found by themselves) into the word Clearlook. It is done through real-time spell checking while typing. This feature is available in some other products, but it slows many of them down to an unacceptable level. Clearlook exploited OS/2 to keep up with my keystrokes well, even while real-time checking was taking place. Of course, if you're a poor typist, you'll appreciate the fact that this feature can be turned off so you aren't continually interrupted.

Another annoying aspect of the spell checker, for those of us with imperfect fingers, is that you can't correct a word by double-clicking on the desired replacement word in the spell checker. You have to click on the

desired word and click on the Correct button. If you want to replace a misspelled word with one that isn't provided, you can't type in your own replacement. The dialog only offers options to add your incorrect spelling to the dictionary or replace it with one of the suggestions. When Clearlook doesn't have the word you want in its list, you must either add an incorrect word to the dictionary or let Clearlook replace the word with one you don't want and then change it manually later.

Installation creates lots of new Workplace Shell objects, including templates and associations. That makes Clearlook more usable if you decide to keep it. Unfortunately, no uninstall procedure is included to clean up if you decide the product isn't for you. The volume of reader mail on this topic indicates that this oversight is unacceptable.

User interface decisions

I like the sliding-scale zoom ability. It makes it easy to size text for best usage of your screen real estate. I disagree, however, with Clearlook's decision to leave the pointer as an arrow, instead of the standard I-beam that most applications use in text fields. It makes it more difficult to precisely position the pointer between two characters. It can be a bit of a challenge to select the first character of a line with the mouse pointer. When you move to the far left of a line, Clearlook assumes you want to resize the cell. To get to the first character of the line, you have to press the <Ctrl> key to disable that pointer change.

Once you position the pointer and mark text, you find another departure from expected behavior. After marking a section of text, I expect the next keystroke to replace that marked text. Not so with Clearlook. You must go through the specific delete or cut step to replace it. If you are planning to paste the cut text elsewhere in the document, you'll find another surprise. Clicking on the paste icon doesn't paste the text at the current cursor location. It changes the pointer and you must click in the text

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again where you want it to paste. Clearlook does, however, support the convenient technique of moving marked text directly without forcing separate cut-and-paste operations.

I found some other oddities as well. I was only able to resize imported bitmaps by using the right edge or the bottom. The pointer refuses to change to the resizing arrows at the top or left edges. Moving the bitmap is even tougher. Mouse-button two has no effect and no move option appears in the object's pop-up menu.

I also found their choices unusual in the use of hot keys. Pressing <Ctrl+I> starts italics, <Ctrl+B> begins bold text, and <Ctrl+U> starts underlining, as you would expect, but pressing the key again doesn't end the attribute and return you to normal text. You have to press <Ctrl+R> to change it back.

I like the ease with which you can change text colors. As color printers become more common, this feature will become more important for everyone. It's important now to anyone who does desktop publishing and brings disks to a professional printer for production. But, because Clearlook can't export PostScript files, taking files to a professional printer isn't an option.

Word processing basics

Clearlook only imports WordPerfect 5.1 and 5.2 files (even then, information such as fonts and attributes disappear) or plain text. What's worse, it only exports plain text or its own format. This incompatibility will keep Clearlook out of the corporate environment until they can add more filters—document sharing is too important. I was also distressed by Clearlook's rigid attitude toward file extensions. Clearlook files must have a .ctx extension and WordPerfect files must have a .wp extension to be imported. Files with other names are treated strictly as plain text.

Headers, footers, endnotes, and footnotes are all supported, as well as search-and-replace and unlimited undo/redo. Style-based layouts make it easier to ensure consistency among sections of a document, such as headings, subheadings, and so on. Creating tables

is also very straightforward and Clearlook makes it easier to size and position the individual columns, rows, and cells than some other products.

Rendering OS/2 fonts is a problem for many word processors, notably Ami Pro. Clearlook does an excellent job with it. Text is relatively easy to read, even in smaller sizes. Kerning is automatic, removing the annoying spaces that can appear between characters that should actually overlap, such as with the pair AW.

I disagree with Clearlook on the definition of the term "thesaurus." I expected it to find words with similar meanings to the specified word. Looking up the word "zoom," however, found the words boom, doom, room, some, Zion, and zone. It seems that if no synonyms are found, Clearlook shows you a list of words that might appear in the suggested alternatives window if you were doing a spelling check.

A peculiarity of note is that the word "index" isn't in the documentation's index or table of contents. It isn't in the on-line help either. In fact, you have to do some real digging (unless you're one of those people who automatically reads the manual of a new product from cover to cover) to discover that the key to creating an index is the use of transforms. Mind you, once you get into transforms, you'll find that it is a very powerful concept. You can label parts of the text for the table of contents and index. You can also label text for other attributes, such as name, address, and phone number. Through transforms, these items can be copied into a new document with a predefined format. Text that is marked for transformation changes color so you can tell which words are already marked.

Printing envelopes is also done with transforms. You mark the pieces of the letter that correspond to the lines of the address and use a transform to pull them into a new envelope document. It is an awkward method and the sort of thing many people prefer to do with a macro. Unfortunately, Clearlook doesn't include any macro support whatsoever, although it is promised for a future release. Likewise, the ubiquitous equation editor is also a future feature (for those who care). Subscript and

superscript support is available in two different sizes in the meantime. In addition, no support for outlines, numbered lists, or bulleted lists is included yet.

Glee or flee

I can't give a clear-cut answer as to whether or not you should buy this product. Many points can be made on both sides. The import/export problems eliminate a lot of potential buyers, at least on the corporate side, but the attraction of a fast native OS/2 application helps balance that loss. Because of the similarities between the two products, Clearlook will probably slide into the void left by DeScribe's apparent abandonment of the end-user market.

RESOURCES:

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Atlanta, GA 30328
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73577,442 CompuServe OS2AVEND section 1
(demonstration version is available in this library)
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Clearlook 1.1 (\$199)

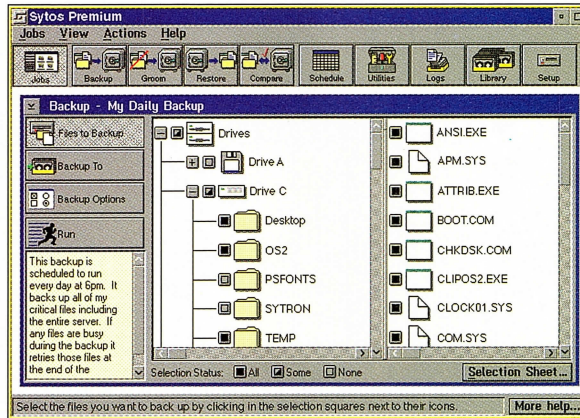
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Brian Proffitt has been in the computing industry for 20 years. He was part of IBM's OS/2 team, left IBM to become the director of PC Week's Corporate Labs, and is now the president of Visionary Research. Brian is the author of two books on OS/2, is a contributing editor for OS/2 Developer and senior contributing editor for OS/2 Magazine. He can be reached at Internet 75300.1466@compuserve.com.

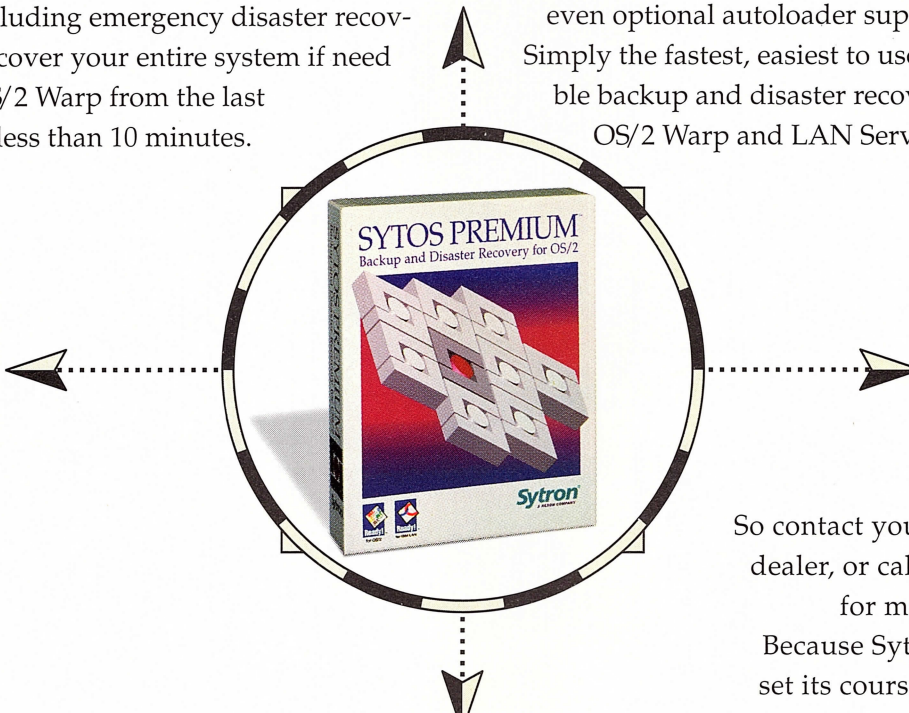
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OS/2, UNIX, Windows, and the Mosaic Wars. BY HAL BERGHEL



WebExplorer Meets Cyberspace

Many of us are old enough to remember the excitement of the microcomputer revolution. There was a widespread feeling that something important was happening and that our civilization would be forever changed (for the good, we hoped). While an important technological milestone, the microcomputer revolution may pale in comparison to the revolution taking place in cyberspace.

The current cyberspace revolution is unique in many ways. Cyberspace is a dimensionless electronic workspace—a place where knowledge and information sources come together via the ubiquitous digital common carriers. It is a virtual conduit for digital media of all types. In many ways, it is as close a sibling to science fiction as high technology (in fact, the term “cyberspace” came from William Gibson’s science-fiction novel *Neuromancer*). It wasn’t as if we had miniaturized cyberspace, or extended it in some important respect. Nothing like it existed before the mid 1980s.

There are three technological advances which allowed cyberspace to develop. First, there was the presence of a unifying digital infrastructure—in short, the networks. These digital common carriers are unifying because all transmissions, no matter what information they

Table 1: Comparing Web Explorer with other Windows products.

	NetScape 1.0	Air Mosaic 3.0	InternetWorks b4	WinTapestry	Web Explorer 1.0
Multithreading	—	—	■	■	■
Integrated search	■	—	—	—	—
Hotlist/bookmark manager	■	■	■	■	—
Deferred graphics loading	■	■	■	■	■

contain, are ultimately reducible to strings of binary digits or bits. The digital networks are the cement that holds cyberspace together. While there are many competing networks, the one that is the most important at this moment in time is the Internet.

The second requirement was software support of an appropriate set of operational metaphors. Paramount among them is the cut-copy-paste paradigm from desktop publishing. The support of the extensibility of such metaphors to non-textual domains

made multimedia a reality. One now routinely cuts, copies, and pastes sound bites, video clips, animations, and virtual slices of reality just as one manipulated words and phrases in ASCII documents just a few decades ago.

The third requirement was the software required to support virtual terminals. This concept is derived from the original remote login procedures built into Telnet many years ago. Now, graphical user interfaces, multimedia, and Internet navigation allow programs with strange names like Mosaic,

Harmony, Gopher, and Prospero to escort us on virtual trips through cyberspace. What you see on your display terminal may only exist on your display, at least in that form. This is the world of client-server (aka distributed) computing.

Of all of the Internet protocols for such virtual travel, none has caught on like the World Wide Web. (See "Cruising the Internet," *OS/2 Magazine*, November 1994, page 30.) The Web represents the most rapidly growing sphere within cyberspace. The tools of the Web are the client-server navigators and browsers. Since we're representing the desktop perspective, we'll confine ourselves to the client side of the cyber fence.

Some OS/2-compatible Windows clients.

The following products were tested on an IBM ValuePoint 486DX2 with OS/2 2.11, IBM's TCP/IP suite, and a generic 8-bit ethernet card. The Internet connection was through a network, not a SLIP or PPP-hosted dialup session, as is provided out-of-the-box in OS/2 Warp 3.0.

InternetWorks beta 4

BookLink Technologies

This product reveals some excellent software engineering in the backplane. It has, without question, the most powerful Internet interface, including multithreading and multi-pane windows. This aspect was beautifully done. Even more noteworthy is its innovative approach to navigation and browsing, both a blessing and a curse.

The upside is that InternetWorks isn't hampered by the standard Mosaic orientation to navigation and browsing like most of its peers. The downside is that the hotlist management, while powerful, is not only unintuitive, it's rude. This otherwise fine product cries out for some professional user-interface engineering.

OS/2 hint: Both of our copies contained a bug in the setup program. Pre-loading Disk 2 in a temp area on the hard disk and substituting that directory for *a:* at the "insert disk 2" prompt appears to fix the problem.

Air Mosaic 3.0

Spry Inc.

In terms of functionality, Spry's product is solid in all respects. In terms of a broad-based client, Spry has the edge over the others. Its adjunct programs for ftp, e-mail, and telnet sessions are all hardy as well. Its version of Mosaic is also robust although lacking in a few performance and navigation areas.

OS/2 hint: The installation program will not work with Win-OS/2 and neither will the mailer and NFS program since both are specifically written for Windows NFS. However, the Mosaic, ftp, and Telnet clients are so powerful, the Air series is still worth consideration. The installation kludge that I use to install on a Windows machine and copy the binaries over to the OS/2 box. It works without a hitch.

NetScape Navigator 1.0

NetScape Communications Corp.

This tool is easy to install under OS/2. NetScape has the best engineered search engine available, and solid bookmark folder management. It's a very respectable Web client; the only major deficiency is that it comes as a stand-alone Web client, like WebExplorer, and lacks the adjunct software packaged with its more competitive peers.

Web client operating systems

Cyberspace has its origins in the UNIX community. A respectable number of the major innovations in the client-server arena first appeared on UNIX platforms. Many, if not most, of the high priests of cyberspace were baptized in UNIX and remain faithful to that sacred cause.

However, most of the world's future cybernauts will remain outside that hallowed order. The numbers speak for themselves, with somewhere around 60 million licensed users of Windows 3.x, and six million OS/2 users who have the ability to use Windows programs (through real Windows or OS/2's Win-OS/2 emulation). Compare that to a few million Macintosh users and even fewer UNIX users. The big-ticket cyberspace market on the client side is obviously the Windows-compatible market.

The Internet's client side was originally dominated by UNIX workstations, but this is no longer the case. The PC versus UNIX dichotomy has all but vanished with the modern Intel microprocessors and multitasking PC operating systems (OS/2 and Windows NT), and the utility of cyberspace access has

Internet e-mail under Win-OS/2

I have been happily using the Internet Access Kit (IAK) for a few months now and, while I think that most of the tools are serviceable, one application has caused me no end of grief: Ultimail Mail/2 (or UltiMail/2) Lite.

This would leave OS/2 users in a lurch were it not for OS/2's support for Windows mail programs. And, while the overhead of Win-OS/2 must be considered, a well-written Windows mail program will still be faster and have more useful features than Ultimail/2 "Lite."

When looking for a Windows mail program, keep in mind the protocols that Advantix and most other Internet providers use to send you mail. Internet mail is usually sent via SMTP (Simple Mail Transfer Protocol) and received from a POP3 (Post Office Protocol) server. Another protocol that's useful in a mail reader is MIME (Multi-purpose Internet Mail Exchange) which allows binary files to be included with text messages. I found two freeware Windows mail programs—Pegasus and Eudora—that met this criteria and was impressed by what they had to offer.

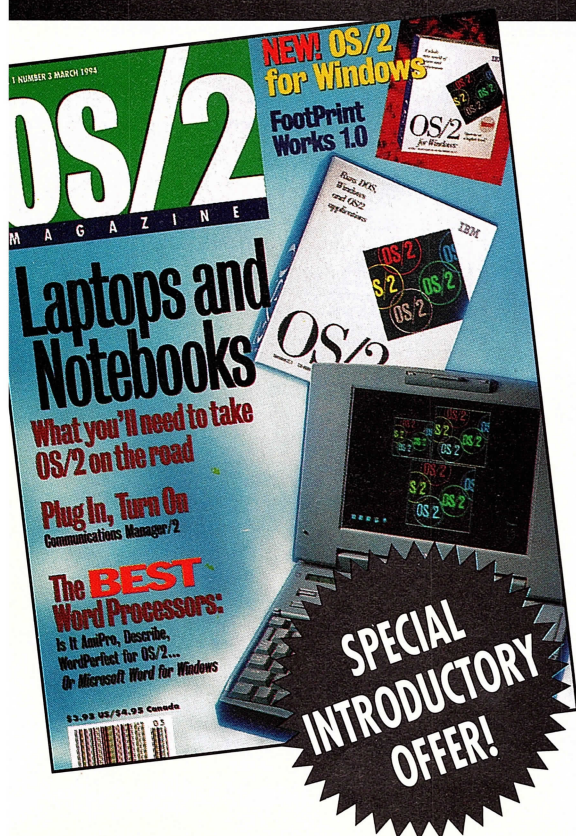
To configure both of these mail programs, you need the following information: The name of your mail server, which is usually the name of your Internet provider with a *mail.* in front of it (for example *mail.mfi.com*), will go in both the "SMTP Server" and, if it's there, "POP3 Host" lines of mail programs. You will also need to fill in the name that you use for your account. If your on-line address is *ronald@mcdonalds.com*, you'll often fill in just *ronald* and, of course, your login password, so your mail program can tell the server it's really you.

The first program I tested, Pegasus Mail 1.2 (r2), proved to be the more feature laden of these two. After installing the program, I found that I had to go to the preferences/advanced settings option under the file menu and specify the "always load winsock" option, and relaunch the application to see the Internet Mail options. After that, I chose the network-configuration option under the file menu, filled in all of the pertinent information, and I was sending mail. The program includes a very impressive mail-filtering system, which can automate the routing, forwarding and copying of messages and even help maintain a mail list. Other niceties include a spell checker, a button bar, and the ability to fetch mail at fixed intervals as long as the program is running.

While Eudora 1.4.1 doesn't have all of the bells and whistles that Pegasus offers, such as spell checking and incoming message filters, it's the perfect solution for someone who just needs a basic mail program. It takes up less disk space (1 MB vs. Pegasus' 2.7 MB) and has the rudimentary message-handling and address book needed to communicate with other Internet dwellers. Setting up Eudora was as easy as choosing configuration under the special menu and filling in the appropriate information.

This story does have a happy ending, however, since you won't have to stay in Win-OS/2 forever. By the time you read this issue, a shareware program, comparable to Eudora, called PMMail should be available at either ftp.cdrom.com or hobbes.nmsu.edu, and rumor has it that both Qualcomm and Pegasus are working on OS/2 versions of their e-mail programs.—Alexander Antoniadis

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been convincingly demonstrated to large numbers of typical computer users—that is, PC users.

The domination of the client side of cyberspace by PC users took place only within the last few years. Current esti-

mates peg Internet users at 20 million—several times the number of UNIX workstations in use. It is projected that this figure will double before the end of 1996. Most of the projected growth of Internet use will have to come from the 125 million or so PC users, since the UNIX world is already connected for the most part. We're talking megamarket here on the Intel side!

The point is that the operating system that prevails in desktop computing will inevitably prevail over the client side of cyberspace. The developers will orient their best work for the largest market and hence the largest source of potential revenue and profit. Unpopular though it might be to say in *OS/2 Magazine*, this probably indicates the Windows platform. Unless OS/2 Warp exceeds all expectations, it won't really matter that Windows NT has a 1980s look-and-feel, or that Windows 95 keeps being delayed. Microsoft's installed base will drive the Web client market not because of any stellar technology but because of Microsoft's close-knit relationships with third-party developers and an extremely aggressive approach to preload contracts with OEMs. After all, has any third-party Web browser developer publicly committed to OS/2 Warp?

That's where things stand in early 1995, with Internet cybernautics a schizophrenic world of both UNIX and Windows applications.

OS/2 in cyberspace

Enter OS/2. Left out in the cold? Hardly. From the point of view of cyberspace, 1995 could become OS/2's golden year. OS/2's strengths are threefold. First, there are several solid X Window clients for OS/2 from IBM, Hummingbird Communications, and others (see "X Windows on the Desktop," *OS/2 Magazine*, June 1994, page 30.) Such X clients integrate seamlessly with UNIX client-server environments, although the initial setup is a hassle best left to the pros. OS/2 support is also available for Motif, UNIX's common graphical user interface. In short, OS/2 has X Windows pretty much covered for any UNIX user who didn't want to wander too far from the well. They could become one with OS/2 without much discomfort.

Second, most of the major client navigator/browser development activity at this moment is in the Windows 3.1 market. Win-OS/2 supports most of those 16-bit Internet-access applications. To the degree that OS/2 Warp remains compliant with Windows

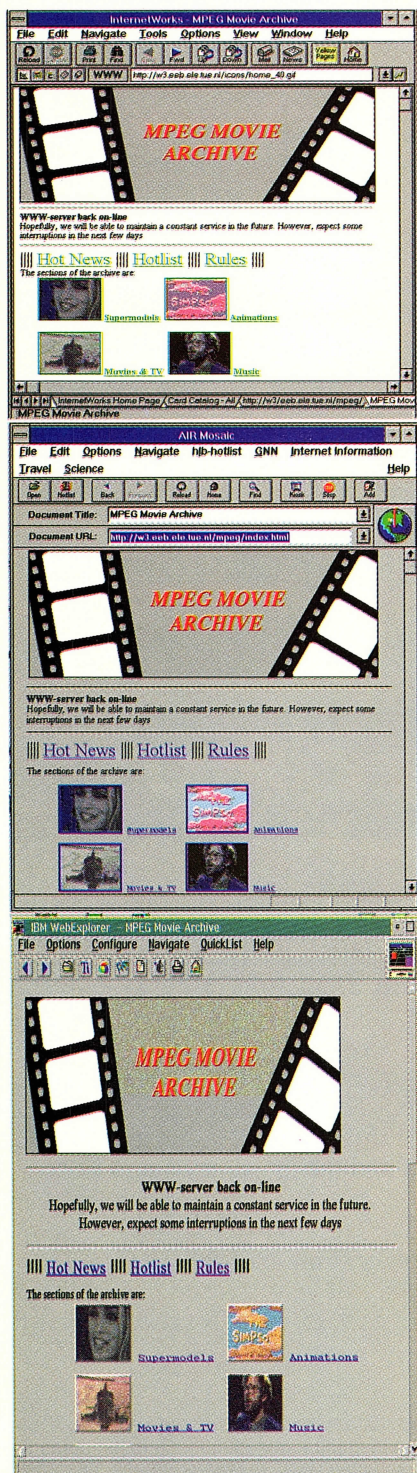


Figure 1: InternetWorks, Air Mosaic, and Web Explorer concurrently launched from OS/2.

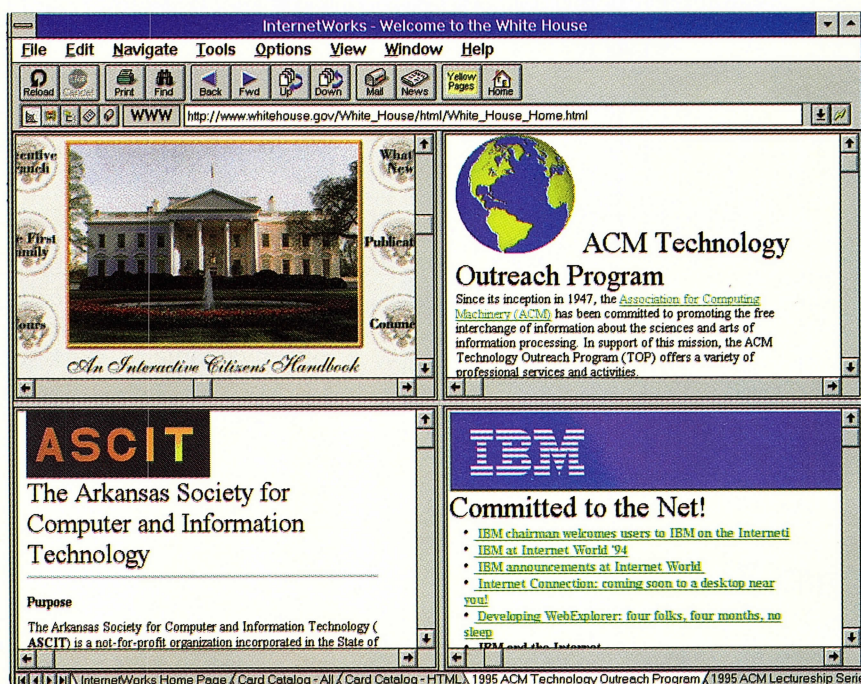


Figure 2: Multithreading and multipanining on InternetWorks running under OS/2.

standards, especially NFS, OLE2, and Winsock32, it's also competitive for 32-bit client applications. In other words, for the moment, OS/2 has the Windows 3.1 market covered which, for all intents and purposes, includes most of the commercial Web navigator/browser market.

Third, OS/2 is a superb multitasking environment for the desktop. Client-side software, especially when it comes to cybermedia, consumes a lot of system resources. With a navigator/browser loaded, a multimedia player spawned, and some serious file exchange over the Internet via NFS mounts, a computer without preemptive multitasking soon becomes a boat anchor. One of life's little ironies is that the big market for multithreaded clients currently lies within the Windows 3.1 community!

What's wrong with multithreading for Windows 3.1? To be fair, developers are actually positioning themselves for the Windows 95 and Windows NT market rather than Windows 3.1, but you couldn't tell it from their promotional material. Also, no commercial developer seems to be taking the Macintosh market as much more than an afterthought.

OS/2 Internet surfing

For these three reasons, excellent X-Window support, TCP/IP, respectable integration with Windows 3.1 clients, and a robust multitasking environment, OS/2 has much to offer today's cybernauts—not to mention the BonusPak bundling of the Internet Access Kit—OS/2 is the only way to go at the moment. Will it remain that way? The future isn't certain.

First, IBM has no state-of-the-art native OS/2 presence in the client-side market. IBM's Web Explorer follows IBM's long-standing tradition of being late to market with stale technology—the final 1.0 release didn't appear until months after OS/2 Warp shipped, leaving early customers to download a constantly changing beta version. What's worse, when it finally *did* ship, Web Explorer in many ways represented older technology.

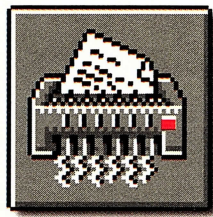
That's not to say that Web Explorer isn't any good. It's a sturdily built, useful client that just came out too late to make any difference. The backplane

seems to be rock-solid, and the interface is tasteful and mainstream. The problem is that the product was out of date before it shipped. In order to see why, we need to look closely at the cyber-surfing experience

Cyberspace is an interlinked collection of all types of information resources. A typical surfing experience might involve concurrently playing an MPEG-formatted movie from a distant

server in one window, using another window to monitor file transfers over the Internet, previewing digital artwork in a third, downloading newly discovered shareware in a fourth, cutting and pasting document fragments to the clipboard in a fifth, and building a print queue in a sixth. All this, of course, while other desktop applications are printing, spooling, formatting, and so forth. That's the whole point of multi-

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tasking. There's a lot going on.

Taking advantage of the wealth of cybermedia available in real time places heavy demands on systems and personnel. To surf efficiently, one needs a high-performance client. We will discuss four performance boosters available in current high-performance Web navigator/browser clients, and their support in IBM's WebExplorer 1.0.

First, *multithreading* in a Web client is a must. This is the ability to simultaneously load and view several documents. It is important for two reasons: the bandwidth over the Internet produces long load times (especially during periods of peak usage) and a high percentage of links lead down blind alleys. So, if cybernauts want to avoid spending much of their time watching documents load, they need multithreading.

Second, there is so much information in cyberspace that one really needs to automate the search process. *Integrated search engines* that look for key words and phrases in resources are starting to appear in the newer clients. These programs can quickly locate interesting resources without actually requiring a manual perusal—this ability is an absolute must given the size of cyberspace.

Third, the standard way of retaining lists of interesting resources is with hotlists or bookmarks that contain the addresses (technically, uniform resource locators, or URLs). These lists of clickable entries are the surfer's personal rolodex for cyberspace. Without them, each access requires typing out a string of uniform resource-locator information (the familiar "*http://.....*" business) each time a resource is accessed.

The problem with hotlists and bookmarks is that they don't scale well. The first 50 or so entries, sorted alphabetically, don't cause much trouble, but beyond that, it's a problem. For long lists, it may take as long to find the URL as it takes to load it. For that reason, most advanced clients now offer folder management for hotlists. The bet-

ter clients also offer editors and support URL annotation. Time-savers, all.

Finally, the reality is that graphics, not text, take up the better part of a document's load time. Modern clients are moving toward *deferred image loading*, which first loads the text and links so that the user can continue navigating through cyberspace, then loads the graphics. This feature offers the cybernaut some protection from bandwidth bandits (documents laden with graphics) lurking around the nets.

These are four important performance features that give modern clients a competitive advantage when they compete for the Windows desktop. Table 1 compares Web Explorer with some of the leading Windows products in terms of these features.

Of course, Web Explorer also excels in some things. Reconfigurable caches for documents and graphics are an interesting innovation—so is image rendering. The kiosk or full-screen mode is very useful for presentations because it eliminates the distractions introduced by the background desktop. But while these are nice features, they are unlikely to be perceived as mission-

critical by future cybernauts. The performance features are likely to be far more important. In this regard, Web Explorer, despite its newness, just isn't state-of-the-art.

The Mosaic wars

A few years ago, the World Wide Web and the National Center for Supercomputing Applications' (NCSA) Web browser, Mosaic, were inextricably linked. Today, they are moving apart at breakneck speed. NCSA is currently licensing the use of the tradename and code to some third-party developers, but many of the better innovations are coming from independent, non-licensed developers. Of the products compared in Table 1, only Spry's Air Mosaic is an NCSA Mosaic descendent.

This departure from the Mosaic standard suggests a healthy degree of competitive anarchy amongst developers, which is surfacing in more innovative software and better integration with existing mainstream desktop applications. This bodes well for users as these navigator/browsers become increasingly convenient to use. In the last year or so, almost all of the significant advances on the client side have come from Windows developers, with UNIX a distant second. OS/2 and Macintosh are apparently afterthoughts.

Completing the connection

Unless it pours significant resources into improving the *quality* of the Web browsing experience, IBM is not likely to become dominant in the client navigator/browser market. True, as a stand-alone program, Web Explorer appears to be a cut above average when compared to the entire spectrum of UNIX, Windows, and Macintosh clients. However, it's not on par with the better Windows programs as a stand-alone Web client, and looks even worse when it comes to integration with NFS, electronic mail, Usenet news reader, and conventional desktop applications

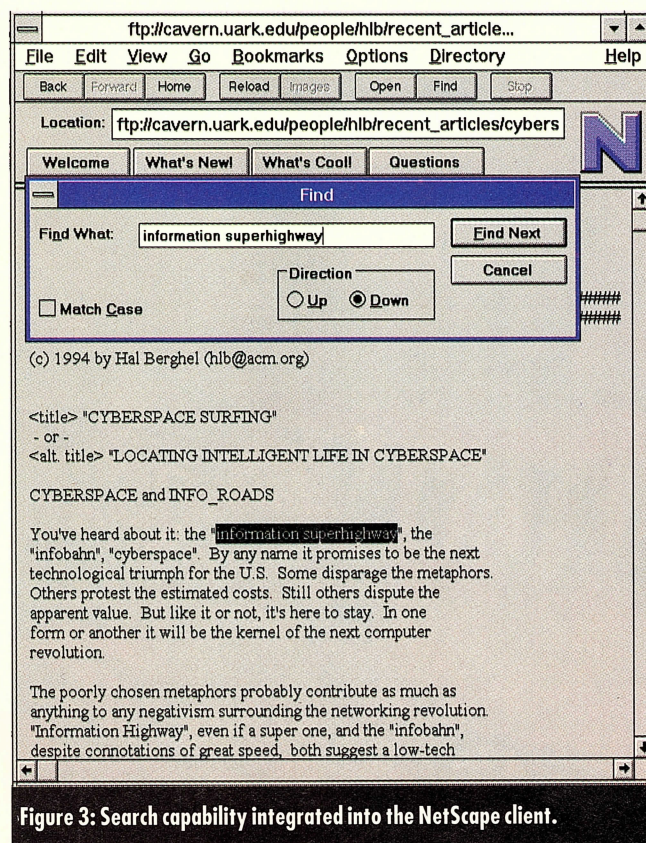


Figure 3: Search capability integrated into the NetScape client.

like word processing, desktop publishing and multimedia.

Thus, assuming that consumers want the best quality cyberspace front-end, OS/2's future as a client is dependent upon Windows compliance—well covered, to be sure, with Windows 3.11 support in OS/2 Warp 3.0, but what about the future? At the time of this writing, there are only two platforms that can take full advantage of the more advanced features of the better Windows Web clients: OS/2 and Windows NT. Thus, so far, OS/2 remains very competitive.

If OS/2 maintains Windows compliance—or if IBM can keep WebExplorer on the cutting edge or convince companies like Spy, Netscape, and BookLink and to create native OS/2 products—it won't be hurt by the rapid advances in cyberspace products for Windows.

On the other hand, if the sole native OS/2 Web client is WebExplorer, and Windows Web clients continue their rapid advance in functionality and friendliness, then Web Explorer, like

Top View, will linger awhile and then gracefully fade away as a product that was too little, too late.

Hal Berghel is an active researcher in many areas of experimental computing including the design and engineering of client-side networking software. He is also an active freelance writer on cyberspace and cybermedia topics, including a regular column, "Cybernautica," which appears in PC AI. His URL is <http://acm.org/~hlb/home-page.html>.

RESOURCES

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fax (617) 449-3300
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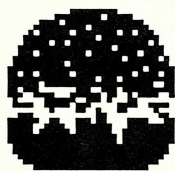
Note that the freeware version of NetScape 1.0 can be downloaded from <ftp.mcom.com>, and Mosaic 2.0 alpha 8 can be downloaded from <ftp.ncsa.uiuc.edu>.

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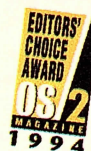
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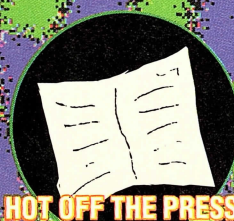
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Exploring IBM Works

The integrated application in the OS/2 Warp BonusPak. **By Lou Miranda**

One of the major criticisms of OS/2 is the scarcity of office-automation applications from well-known software publishers. But the truth is, many OS/2 users, especially those working in a small office or home office, don't need the power of a \$500 word processor, spreadsheet, or database. For many people, a simpler "works" integrated package can do all or most basic office-automation tasks.

Included in OS/2 Warp 3.0 is IBM Works, a major upgrade to Footprint Software's Footprint Works (originally reviewed in *OS/2 Magazine*, March 1994, p. 15). IBM Works has a built-in word processor, spreadsheet, database, charting, and personal information manager (PIM). In short, it has everything most of us will likely need to be productive.

IBM Works is reasonably easy to learn—and that's good, because IBM chose not to ship the software with printed documentation, and the on-line help lacks a tutorial. Unless you're willing to invest a lot of time learning the ins and outs of the product, you'll probably miss a lot of the power under the hood.

In this article, we'll explore using IBM Works in a real-world situation. We'll follow Next Generation Consulting (NGC), a small business, as the president creates a letterhead, an envelope with mail-merge codes, and a fax cover sheet. This will give us a task-based introduction to this powerful set of tools. The assumption is that IBM Works has already been installed from OS/2 Warp's BonusPak.

Next generation letterhead

The first step for the new president of Next Generation Consulting is to create a letterhead for the new business. We'll do this by creating a new IBM Works document, modifying it to suit our needs, and then saving it as a template so it can be used over and over again.

First, open the IBM Works folder and drag a Document template to your desktop. Rename it by holding down the <Alt> key and clicking the left mouse button on the icon; edit the text to read "NGC Letterhead," then click the mouse button on the icon again to save the changes. Now, double-click on the icon to open the document.

Type in the business name and address, just as in any word processor. Enter the business name, a slogan such as

"Nationwide Consulting Services," mailing address, voice and fax numbers, and Internet address. Since OS/2 Warp has FaxWorks built in and full Internet access in the IBM Information Superhighway folder, we might as well let customers know we're well connected.

Writing with style

To distinguish Next Generation Consulting business from its competitors, let's build a memorable image. The first step is deciding which fonts to use; here is where IBM Works' text-formatting styles come into play.

Accessing the styles is as simple as selecting **View Style Palette** from the menu. A small toolbar pops up with a thumbtack on the left; drag the thumbtack with the left mouse button to move the Style palette. Let's create a style for the company name. To start, click the **Define...** button on the Style palette. In the dialog box that pops up, type in "Company Name" next to Style Name in the left center of the dialog. At the top, select **Times New Roman** next to Font. Next to Size choose **18 point**, and select the **Bold** and **Italic** checkboxes under Emphasis. If you have a color printer, under Color, select **Blue**. Then, click the **Add** button and then the **Save** button.

Now, drag the mouse across the company's name (Next Generation Consulting) in the document, select **Company Name** in the Style palette, and click the **Apply** button. *Voila!* The company name is instantly converted. Practice by creating three more styles: Slogan, Company Address, and Body Text. Make Slogan 12-point italic Times Roman; Company Address 9-point Helvetica, and Body Text 12-point Times Roman. Apply them to the appropriate lines in the letterhead, then press <Ctrl+S> to save the document.

Graphic enhancements

A fancy font is nice on a letterhead, but graphics can spruce up an otherwise dull letterhead even more. Adding a graphic is easy: From the menu, choose **File Import Picture**. If we drop down the listbox underneath Type of File, we'll see that IBM Works supports a whole slew of graphics formats, including the most popular BMP, GIF, PCX, and TIFF. (It also imports a wide variety of word-processor formats, including Ami Pro,

Microsoft Word, and WordPerfect.)

If you have a custom graphic in one of those formats, select its file from the dialog box; otherwise, just select the MET (OS/2 Metafile) format, and change the directory to *c:\ibmworks\graphics*, if necessary. Select *usa.met* and click the **Import** button. The mouse pointer will turn into a rectangle with a cross-hair. Click once with the left mouse button where you want the upper-left corner of the graphic to be placed. Drag with the left mouse button to position the graphic.

Depending on how we positioned the text and graphic, the text may have been moved. Change which way the text wraps around the graphic as follows: Double-click on the graphic with the *right* mouse button. Select the **More...** button and a dialog will come up that lets us make the text wrap to the left or right of the graphic. Make a selection, click **Save**, and then **OK**. To see the "big picture" of how the document will print out, select **View Page Layout** from the menu, or click the magnifying-glass button on top of the scrollbar on the right side of the window.

Saving for posterity

We now have a completed letterhead. The last thing we want to do is modify it by mistake: How many times have you created an original document, then modified it and forgot to choose **Save As** rather than **Save**? Luckily, OS/2 Warp has the answer: Templates. Let's turn our letterhead into a template.

Save the document by pressing <Ctrl+S>, then close it by double-clicking on the titlebar icon (the colored balloons to the left of your document's title). Right-click on the icon for NGC Letterhead, and choose **Settings** from the menu to call up our new file's Settings notebook. Click on the **General** tab on the right, then click on the **Template** checkbox. Close the Settings notebook by double-clicking on its titlebar icon.

Notice that the icon for NGC Letterhead has changed. The original icon is now smaller and is superimposed on what looks like a pad of Post-It Notes. This tells us that it is now a Template. To use your letterhead template, just drag it with the right mouse button and drop it on your desktop or in a folder. A completely new document will be created that is an exact copy of

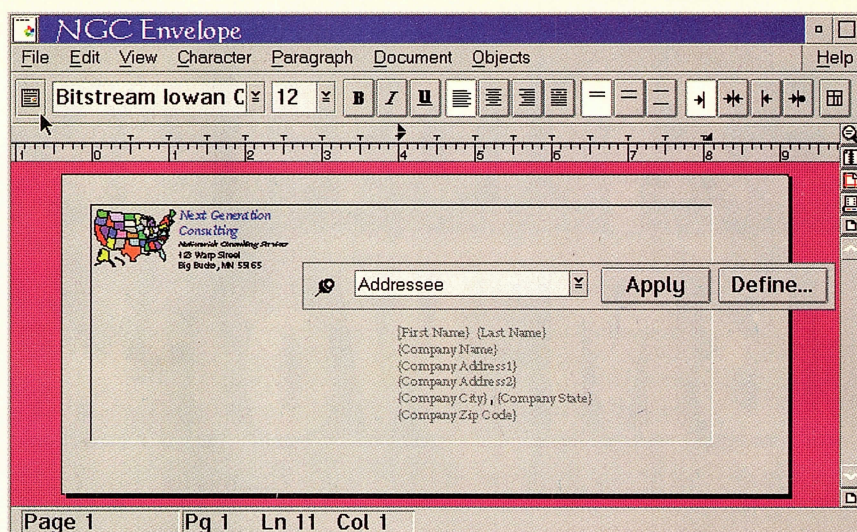


Figure 1: This is how your envelope should look in Print Preview mode. On the right are small buttons to change modes, and in the center is the Style Palette. The mouse arrow points to the icon to be used for drag-and-drop printing or faxing from within the document.

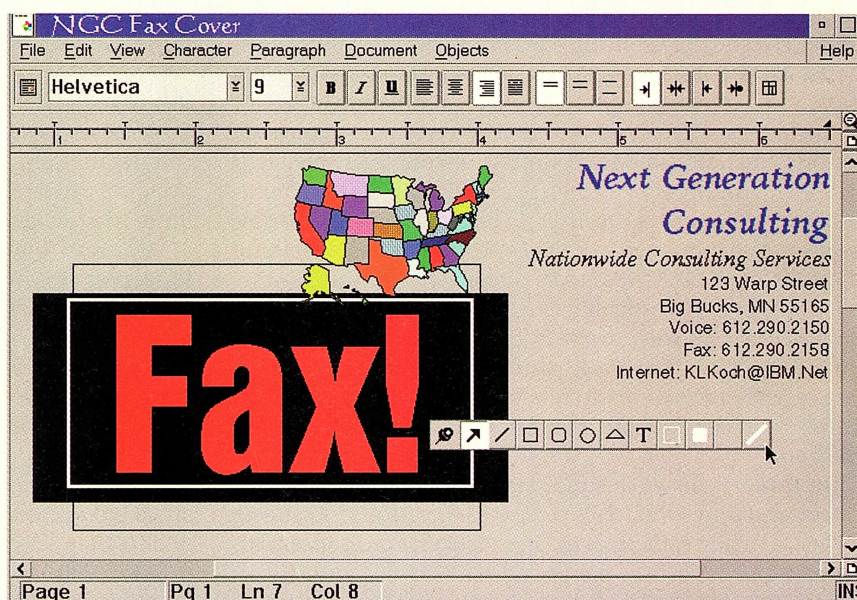


Figure 2: Your fax cover sheet could look like this. The mouse points to the Drawing Palette, which was used to create the word Fax! in red, and the black-and-white box surrounding it.

the template. This guarantees that we'll never accidentally modify the template.

We have just finished creating a letterhead for your new business. Test it by dragging its icon with the right mouse button and dropping it on your printer.

Enveloping your letterhead

A beautiful letterhead deserves an equally outstanding envelope to put it in. Again, Works comes to the rescue. First, create a new copy of your letterhead by dragging with the right mouse button

from your template and dropping on a new place on the desktop. (If a box comes up saying there is a name conflict, select **Rename**, type in "NGC Envelope," and click **OK**.) If you haven't already, rename the copy "NGC Envelope," then double click on it to open it.

We'll want to make the text from the letterhead smaller, and move it to the upper left corner so it looks appropriate for an envelope. Let's make the company name 12 points, and the slogan and

company address eight points in size. Don't forget to remove your phone and email address, since that's not commonly printed on envelopes. Finally, we may want to reduce the size of the graphic.

Next, let's change the page's dimensions so it's envelope-sized. Select **Document Page Setup** from the menu and select **Landscape** under Orientation. Select **Other** for Paper Size, and then type in 9.5 x 4.12 for the size. Now go to Margins and enter 0.4 for Left and Top, 1.0 for Right, and 0.7 for Bottom. Click **Save** and then press <Ctrl+S> to save your envelope. Change to Layout mode by clicking the magnifying-glass button, and it should look very much like an envelope.

A printer just for envelopes?

One way to make your life easier is to create a new Printer object on your desktop just for envelopes; to make it easier to print using drag-and-drop. Here's how:

1. Right-click on your regular Printer object on your desktop and select

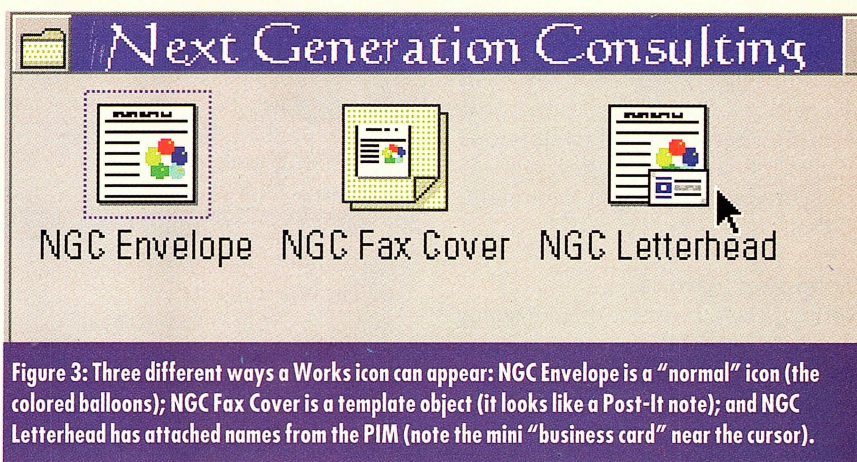
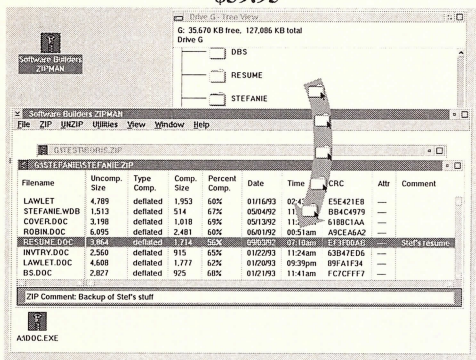


Figure 3: Three different ways a Works icon can appear: NGC Envelope is a "normal" icon (the colored balloons); NGC Fax Cover is a template object (it looks like a Post-It note); and NGC Letterhead has attached names from the PIM (note the mini "business card" near the cursor).

2. Type "Envelope" next to New Name, select **Desktop** from the list, and click the Create button.
3. In the Create a Printer dialog, make sure the Output port is the same as your regular printer; probably LPT1. Then, click the Create button.
4. We should have a new Envelope printer object on the Desktop. Right-click on it and select **Settings** to edit its Settings notebook.
5. Select the **Printer Driver** tab in the Settings notebook, then click on the **Job Properties...** button.
6. The dialog box that pops up is different for each printer driver. We should be able to select an Orientation of **Landscape** and a Form of **COM-10 Envelope**, the standard for #10 business envelopes. We might also want to choose Manual Feed or select a different paper bin if your printer has one for

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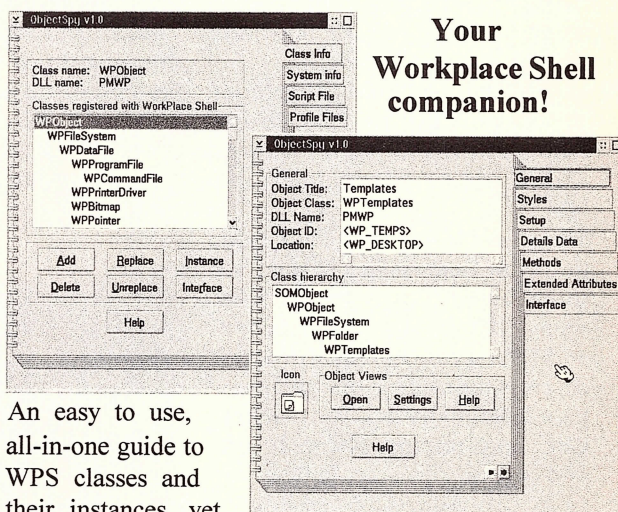


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envelopes. Close the Settings notebook. Now, go back to your NGC Envelope document and choose **Printer Setup**. Select **Envelope** and click the **Save** button. Press <Ctrl+S> to save the envelope document, then close it.

Dropping names

Nothing could be easier than dragging a name from IBM Works' address book, dropping it onto the NGC Envelope object, and having a perfectly-formatted envelope come out of your printer.

1. Right-click on the NGC Envelope object and select **Settings**.
2. On the first page tab (Merge), select **Print object** under Action on drop.
3. Close the Settings notebook and open the document.
4. Move the cursor to the end of the document by pressing <Ctrl+End>. Press <Enter> until half way down the length of the envelope.
5. There should be a ruler on the top of the document (if there isn't, select **View Ruler** from the menu) with two triangles on the far left. Drag the lower triangle with the mouse and let go when it is on the four-inch mark. The cursor should now be below the four-inch mark, about halfway down the envelope.
6. Select **Document Mail Merge** from the menu. Click on **PIM Phone Book** and click **OK**. This will allow us to do a mail merge with the Works PIM.
7. Select **Edit Insert Data Field** from the menu. Click on **First Name**, click **Insert**, and then press the space bar once. Click on **Last Name**, **Insert**, and then press <Enter>. The space bar keeps the fields on one line; pressing <Enter> moves you to a new line.
8. Click on **Company Name**, **Insert**, and press <Enter>. Repeat for **Company Address 1** and **2**, then repeat for **City**, **State**, and **Zip Code**, but press the space bar instead of <Enter>.
9. Click **Cancel**, press <Ctrl+S> to save your document, then close it.

Let's run a test: In the IBM Works folder, double click on the **Phone/Address Book** to open it. Drag a name from the Phone Book onto the NGC Envelope object and it should automatically print

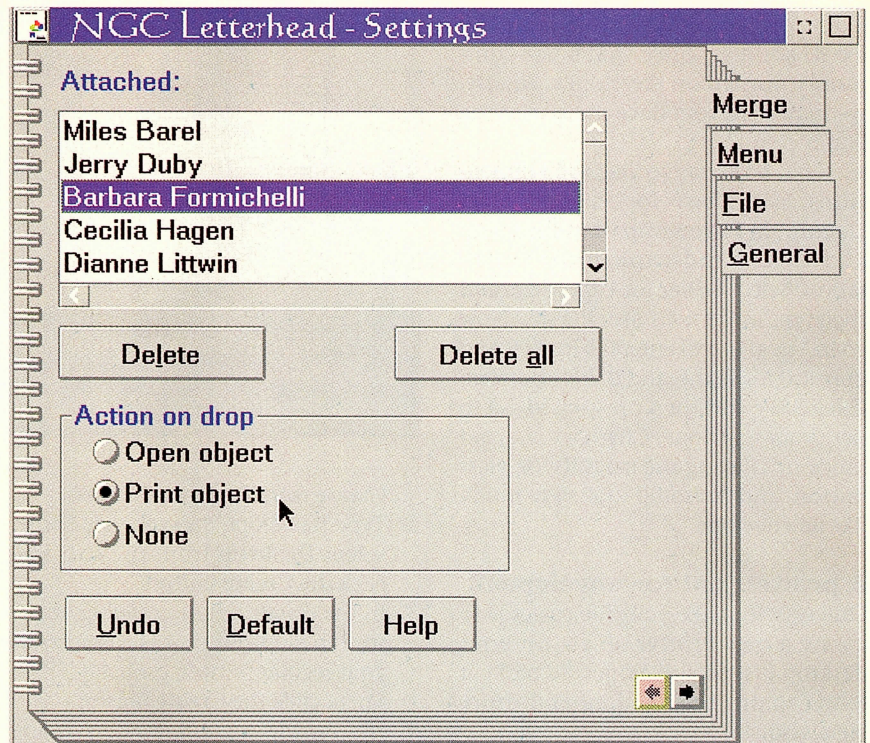


Figure 4: Works documents with attached Phonebook (PIM) data have an extra notebook tab in their Settings notebook. Here, we can see the Merge tab.

a perfectly addressed envelope if you press the **Print** button when it appears. We can even select multiple names (by holding down the <Ctrl> key when selecting them) and drag them all to the envelope object. And, if we created Contact Lists, we can drag an entire contact list and all the names will be printed.

Just the fax

Our final task is to design a fax cover sheet. This procedure introduces us to the Draw Palette, which lets us draw and annotate a document.

First, create a copy of NGC Letterhead, and rename it "NGC Fax Cover." Open it up and select **View Draw Palette** from the menu. Use the left

Drag, drop, print, and fax!

IBM Works supports drag-and-drop operations for a surprising number of things. Read the *readme* file in the IBM Works folder for more details, but here are the basics:

- As expected, you can drag an IBM Works object to your printer or fax objects and they'll be printed or faxed after they're dropped.
- You can "attach" names to an IBM Works object by dragging and dropping name(s) from the Phone Book or entire contact lists. If you have mail-merge codes in the document and then drag the document to the printer, IBM Works will *automatically* perform a mail merge as it prints. And, if you drag-and-drop to the fax object, it will do a mail merge and then fax it to the first fax number it finds in each name-and-address object.
- You can view the attached names in either of two ways: Either select **View Attached Data** from the IBM Works menu, or select the **Merge** tab in the Settings notebook.
- Do you ever get frustrated by the fact that you can drag an object to the printer to print it, but once the object is open, you need to use the menus to print? IBM Works gets around this problem. Notice the small icon to the left of the font name and underneath the main menu under **File**. Just use the right mouse button to drag this icon to the printer or fax and it will send the current document.

mouse button to drag the thumbtack to position the palette in a convenient spot anywhere on your desktop.

Let's enter the word Fax! in big red letters (of course, it won't fax in color). Click on the "T" icon on the Draw palette. Then type in "Fax!" and select one of the justification buttons (note that we can even draw the text vertically) and click OK. Then, click the mouse where we want it to appear.

To modify the text's appearance, click on the unfilled square to the right of the T on the Draw palette, then select red. To create a black background, select the black square to the left of the T, then drag the mouse to draw it. Use the other tools to change the fill and border colors, and change the fill and line patterns. Try experimenting to come up with new designs.

To change the order in which objects appear on the screen (for example, to put one object behind another object), just click on the object we want to change and select **Edit Bring To Front** or **Send To Back**.

When we're done drawing, double-

click on the thumbtack on the Draw Palette and it will disappear. One problem with using this fax page with FaxWorks Lite is that it adds a whole other page to every fax, and thus eats up hard disk space, increases transmission time, and costs your recipient a piece of fax paper. Fortunately, there are workarounds, but only if you have the right software.

If you have FaxWorks Pro, the more expensive version of FaxWorks, drag the NGC Fax Cover object to the FxPrint object on your desktop. When a dialog pops up asking us to send a fax, click **Open** instead. Use the mouse to select the smallest area of the page that completely encloses all your text and artwork. Then, select **Edit Export Bitmap** and give it a name such as *ngc-fax.bmp*. Next, go into **Utilities Settings**, select the **Cover** tab in the Settings notebook, and choose *ngcfax.bmp* under **Cover Bitmap**. Now, FaxWorks Pro will use your bitmaps as the cover page.

If you don't have FaxWorks Pro, you can use a screen-capture tool. PM

Camera/2, available on many bulletin boards, the Internet, and CompuServe, is a free one from IBM. Just open up the NGC Fax Cover document and use PMCamera/2 to capture it to a *.bmp* file. Be sure to save the *.bmp* file to your FaxWorks directory. Next, go into FaxWorks Lite and choose **Settings...** from the menu, select the **Cover** tab, and select that *.bmp* file as the **Cover Bitmap**.

Plenty of features

This article has only touched on the possibilities for using IBM Works as a basic office-automation application, or for use in a home OS/2 PC. It's too bad that IBM chose not to provide proper documentation and tutorials for IBM Works; let's hope that third-party book publishers satisfy this need, making the free IBM Works a true bonus.

Lou Miranda is a former contributing editor to PC World and is currently an OS/2 programming consultant in St. Paul, Minn.

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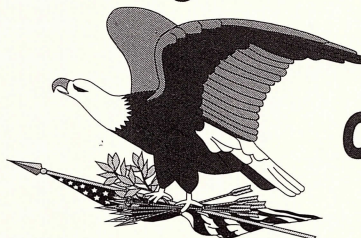


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The Path to \\nowhere

A guided tour around OS/2's directories. By Bruce Hallberg

It's not what you know, it's who you know, right? Or, in the case of operating systems, it's how well you can find programs, data, and other files when you need to. You don't really need to memorize where OS/2 stores all of its various bits and pieces to use the operating system. However, you'll find it useful to understand its directory structure: what goes where and how it's organized. This knowledge will not only help you find what you need when you need it, but can often help in resolving problems with your system.

Compared to OS/2, understanding the DOS and Windows directory structures is simple. DOS has two key directories, the root (usually `c:\`, the root directory of the boot drive) and `\dos`. Windows has two additional directories, named `\windows` and `\windows\system` by default. OS/2 Warp, on the other hand, builds about 50 directories for a complete installation—and that's before you install any of the BonusPak programs, which add quite a few more.

Although it might not seem so on first glance, these directories are laid out in a logical manner, so it's easy to learn what goes where, and how it all works. (Figure 1 shows OS/2's overall directory structure.) Let's work through just the major directory structures; the complete list is in Table 1.

The root

OS/2's root directory, `c:\`, not only contains directories needed by OS/2 and application programs, but also several key files. These include hidden files that OS/2 uses at boot time, called `os2boot`, `os2ldr`, `os2krnl`, and a few others. The root also contains the OS/2 startup files `config.sys` and `startup.cmd` and the Virtual DOS Machine (VDM) startup file,

`autoexec.bat`.

If the hard-disk partition was created using the File Allocation Table (FAT) format, the root also contains the hidden file `ea_data._sf`, which stores the extended attributes for the drive. (In reality, the underscores we've typeset into the file's name are spaces, not normally allowed in FAT-system file names.) Disk partitions formatted for the High Performance File System (HPFS) store extended attributes as part of the file system, and so don't require `ea_data._sf` or an equivalent.

Important directory structures built under the OS/2 boot disk's root are `\desktop`, `\nowhere`, `\delete`, and the critical `\os2`.

The \desktop structure

The `\desktop` directory structure is perhaps the most interesting one found in OS/2. Before understanding it, however, let's discuss the nature and purpose of Extended Attributes (EAs).

OS/2's Workplace Shell is an object-oriented user interface (often abbreviated OOI), and the Desktop that you see on the monitor contains many objects that do not correspond to physical files on the disk. Examples of these include the Shredder, object shadows, and the LaunchPad. Further, the Desktop contains many object attributes that don't actually exist as discrete files, such as icons, key indexing words, file comments, and long filenames (on FAT drives). Most of these non-file objects and object attributes are stored as Extended Attributes (EAs) on your disk. Each EA can store as much as 64K of data associated with any particular file or directory. On HPFS drives, the EAs are stored alongside the actual file as part of the file system, since HPFS was designed with EAs in

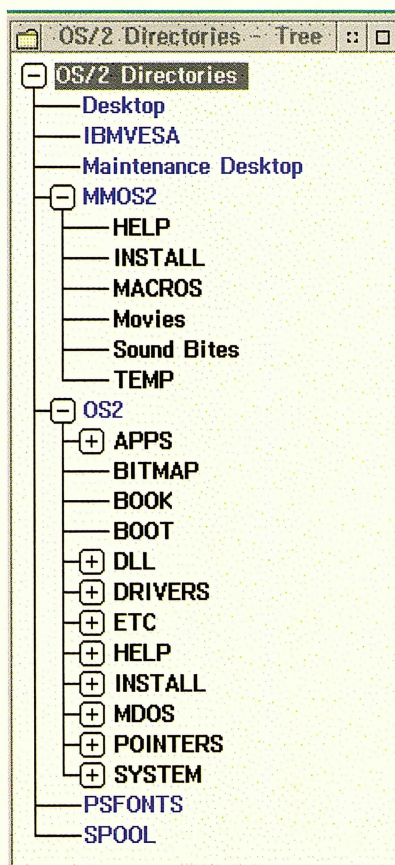


Figure 1: Key OS/2 Warp directories.

mind. On old-style FAT drives, they are all stored in a single file in the root, *ea_data.sf*.

Files stored on FAT drives are limited to DOS's filename limit: eight characters followed by a period, followed by a three-character extension (usually called the 8.3 format). On the other hand, HPFS drives can store filenames as long as 254 characters, and these filenames can contain spaces, multiple periods, and so forth. To store such long filenames on FAT drives, OS/2 places the full long filenames as an EA in the *ea_data.sf* file, and uses a truncated 8.3-compliant name in the FAT system's directory structure.

In the case of a FAT drive, how does the system know which *ea_data.sf* entries belong to each file or directory? The answer is that the FAT drive's file-allocation table contains two "spare" bytes per directory entry, which DOS (and Windows 3.x) don't use. OS/2 uses these two bytes as an index into *ea_data.sf*. Therefore, when OS/2 "looks" at a particular file or directory in the file-allocation table, it also finds two bytes, which then tells it where to find the associated EAs. OS/2 always looks for EAs for every directory entry, whether the entry is a file or a directory.

Now, this raises a second question in the case of the Desktop. Since some objects on the Desktop correspond to directories or files on the hard disk, while others exist solely as extended attributes, how does OS/2 sort it all out? OS/2 avoids the issue by turning those "non-existing" objects into entries associated with the *\desktop* directory tree. Taking those two bytes for each directory entry, it can then retrieve all associated EAs. This keeps life simple for the operating system by making the process into a simple one-two punch every time it displays a folder: Get the directory entries, then the associated EAs.

All directories are represented as folders under OS/2. The Desktop itself is also a folder under OS/2, albeit one that has some special properties. This folder is completely represented in the *\desktop* structure on your hard disk. So, when the Desktop is opened at boot time, OS/2 reads the complete directory structure listed in *\desktop*, retrieves all the EAs, and everything (be it a physical file, directory, shadow, or

other non-existent object) appears on your screen.

The *\desktop* directory structure, for the most part, provides a place for all of the EAs and other objects to reside. Often, if you examine the directory in detail at a command prompt, you will find few, if any, actual files in it.

Should you manually store directories or files in the *\desktop* structure? You can. If you add directories to *\desktop*, they appear in the Workplace Shell Desktop automatically as folders. (Go ahead, try it: Create the directory *c:\desktop\test* and, in a few seconds, the TEST folder will appear on the WPS Desktop.)

Except when experimenting, most experienced users avoid manipulating the *\desktop* directly, and instead manipulate the Workplace Shell, letting it manipulate the *\desktop* to reflect shadows and program-reference objects. One reason is that subdirectories under *\desktop* are typically difficult to type and are often unintuitive, since OS/2 truncates their names on FAT drives. This makes it difficult to manipulate these files from the command line. Additionally, if you dual-boot to DOS and need access to those files, you'd normally want to have fewer (and simpler) directories to search through to find them.

One case in which you *would* want to manipulate the *\desktop* manually, rather than through the Workplace

Shell, is when installing OS/2 on new computers using the Configuration, Installation, and Distribution method. In these cases, you could create CID scripts to create and modify Desktop objects automatically according to your company's policies. (See "Making It Up in Volume," *OS/2 Magazine*, July 1994, page 39, for an introduction to CID, and "Breaking the 80/20 Rule," January 1995, page 33, for a brief discussion of manipulating *\desktop* through CID scripts.)

Almost all of OS/2's required program and data files are stored somewhere in the *\os2* directory structure. For a description of what each of these subdirectories contain, see Table 1.

The *\nowhere* directory

Another interesting directory under OS/2 is the *\nowhere* directory. This directory does not appear in the Drives object under OS/2 Warp, but can be seen if you execute the **DIR** directory command at an OS/2 command prompt.

The *\nowhere* directory is used to hold (or rather, associate) transient Workplace Shell objects. An example of a transient object would be the OS/2 Task List, which exists entirely in memory but still must associate itself with the file system, as all such objects must.

The *\delete* directory

If you've turned on OS/2's undelete fea-

Small performance tweaks.

Here are two key performance enhancements you can make to OS/2 by simple changes in OS/2's directory structure and path statements.

Trick 1: You can improve system performance slightly on FAT-formatted drives by moving the *swapper.dat* file into the root. First, change the directory listed in the SWAPPATH statement to point to the drive's root directory in *config.sys* and reboot. Finish the job by deleting the original version stored in *\os2\system*.

Since *swapper.dat*, OS/2's swap file, is the most intensively accessed file on any OS/2 system, every improvement you can make that results in faster access to that file improves the speed of your entire system. Since files stored in the root require less reading from the drive's file-allocation table to access the files stored there, storing the *swapper.dat* in the root makes sense. (Moving the *swapper.dat* file to the root on HPFS-formatted drives makes little difference, because HPFS uses a much faster technique to find files, and you won't see much, if any, benefit.) Also, if possible, store *swapper.dat* on your physically fastest hard disk (if there's sufficient space).

Trick 2: OS/2 searches directories listed in its three PATH statements (PATH, DPATH, and LIBPATH statements in *config.sys*) sequentially, so you should keep the various *\os2* directories listed in those path statements near the beginning of each statement to help improve performance. Why? When an application or OS/2 command requests that a particular OS/2 DLL file be opened, the faster OS/2 finds that DLL, the faster that request will be fulfilled and processing can resume. Since the files in the *\os2* directory structure are the most frequently accessed on your system, listing them early in each path statement should make a slight performance difference.

Table 1: OS/2's directories.

Directory	What it contains
\	The root contains user-editable startup files (<i>config.sys</i> , <i>startup.cmd</i> , and <i>autoexec.bat</i>) and a number of hidden OS/2 files, such as OS/2 boot files (<i>os2*.*</i>) and the extended attribute file on FAT drives (<i>ea_data._sh</i>).
\delete	When OS/2's undelete facility is enabled, erased files are hidden here prior to being purged from the disk.
\desktop	The entire Workplace Shell (WPS) Desktop structure is stored in <i>\desktop</i> .
\maintena	An abbreviated Desktop called the maintenance Desktop is used during installation of OS/2 Warp 3.0 and is located here. This directory did not exist in previous versions of OS/2. On HPFS drives, this directory name is fully spelled out: <i>\maintenance desktop</i> .
\mmos2	This directory, and all of its subdirectories, contain all of the files needed for Multimedia Presentation Manager support.
\nowhere	The <i>\nowhere</i> directory provides a location for transient objects in the Workplace Shell to exist. Even though you should never see files in this directory, never remove it.
\os2	Command-line programs, such as <i>xcopy.exe</i> , as well as base device drivers required for OS/2 startup can be found in the <i>\os2</i> directory. It also serves as the top most directory for most of OS/2's own program and data files.
\os2\apps	Most of the applets that come with OS/2, as well as the OS/2 games, are found here.
\os2\apps\dll	This directory stores DLL files required by the applets installed in <i>\os2\apps</i> .
\os2\archives	Backup copies of your WPS Desktop and key system files are kept under the <i>\os2\archives</i> directory.
\os2\bitmap	Bitmap images, such as the Desktop backgrounds, reside here.
\os2\book	Look in <i>\os2\book</i> for OS/2's help files.
\os2\boot	Essential device drivers required for the startup of OS/2 are in this directory.
\os2\dll	Most of OS/2's Dynamic Link Library files, as well as subdirectories for each printer you have installed, reside in <i>\os2\dll</i> .
\os2\drivers	Device drivers for different hard disks and SCSI devices live here.
\os2\etc	The <i>etc</i> (pronounced "et-see") directory contains support files for IBM's System Object Modem (SOM) and Distributed System Object Model (DSOM).
\os2\help	Individual programs that are part of OS/2 and contain a Help command, as well as some third-party OS/2 programs, will have their individual <i>.hlp</i> files located in this directory.
\os2\install	This directory contains a hodge-podge of files that are used during the installation or reinstallation of OS/2. You also find the migration database here, which is used when you access the Add Programs object in the OS/2 System folder. Although it's tempting to want to save space by deleting this directory after installation, don't.
\os2\mdos	Files required for OS/2's emulated support of DOS are in <i>\os2\mdos</i> .
\os2\mdos\winos2	The Win-OS/2 support directory, the contents of which change depending on whether you are using an "OS/2 for Windows" version, such as the original OS/2 Warp 3.0, or one of the packages that includes full Win-OS/2 support.
\os2\system	Miscellaneous programs and files related to system management, including the RAS (Reliability-Availability-Support) programs and files required for Dual-Boot support (<i>config.dos</i> and <i>autoexec.dos</i> are two important files stored here). Also, this is the default location for <i>swapper.dat</i> .
\psfonts	Font files for OS/2's built-in Adobe Type Manager (an available option for Win-OS/2) are stored in <i>\psfonts\pfm</i> .
\spool	Printer output being spooled goes into subdirectories of this directory; one subdirectory will exist for each printer object installed in your system.

ture, files that are being held before being permanently deleted are stored in this directory. They are copied here, renamed to an OS/2-generated file name, and the original file is erased. As more and more erased files fill the hard disk, older files are purged to make room for newer erased files.

The files stored in *\delete* are hidden and can only be seen with the **ATTRIB *.*** command or by using a disk editor. Unless you are disabling undelete capability and want to manually remove these files, don't otherwise directly manipulate them. Note that the *\delete* directory will only be created once undelete is enabled; it does not exist immediately after the OS/2 installation.

To enable OS/2's undelete capability, simply remove the REM portion of the SET DELDIR statements in both *config.sys* and *autoexec.bat*, located in the root.

Understanding PATH statements

No discussion of how OS/2 works with directories would be complete without talking about its PATH commands. Three PATH commands are used in OS/2, all of them specified in *config.sys*: PATH, DPATH, and LIBPATH.

- The PATH statement works the same as it does under DOS; it tells the operating system where to search for executable files when you type their names at a command prompt. (PATH is not used when you open a program by double-clicking on it, because, in that case, the exact path is already known to the system.)
- The DPATH statement tells OS/2 where to find data files requested by an application if they aren't in the current directory and if the applica-

tion doesn't specify a path when opening the file.

- The LIBPATH statement controls where OS/2 and its applications search for Dynamic Link Library (DLL) files, which provide common functionality used by many programs and by OS/2 itself.

LIBPATH is the most interesting of the three path statements. It's unique in that you cannot change the **LIBPATH** in an OS/2 command-prompt session. The settings in *config.sys* are permanent for all sessions until you reboot. **LIBPATH** is also important because much of OS/2 and many OS/2 applications are composed largely of DLL files (which have the file extension *.dll*). For these DLLs to be found, their directories must be listed *somewhere* in the **LIBPATH** statement. Unlike the other two path statements, OS/2 will *not*

Solving LIBPATH problems.

OS/2 looks for DLLs by searching the LIBPATH's directories in the order in which they appear in *config.sys*, and the system stops searching when it finds the requested DLL. So, if you have multiple versions of a particular DLL on your system, and the wrong one happens to be in a directory listed earlier in LIBPATH than the correct one, the wrong DLL will be used for satisfying the DLL request. That situation often leads to a system crash.

This search process does have a side-effect. Typically, when DLL files are in use, they are temporarily locked: They can't be overwritten or changed in any way. So, if you wanted to load an update to one of the system's DLL files, it's likely that the DLL will be locked, and you'll be stuck.

The easiest way to overcome this problem is to boot your system from the OS/2 installation disks, open an OS/2 command prompt, and copy the new DLL to the correct location on your hard disk. A faster method is to boot from DOS floppies, manipulate DLL files to your heart's content, and then boot back to OS/2 when you're done. However, if you don't have OS/2 boot disks available, or don't want to boot to DOS, here's an alternative:

1. Create an empty directory (let's call it *c:\junk*), and store the new DLL in that directory.
2. Add that *c:\junk* directory name as the first entry in *config.sys*'s **LIBPATH** statement.
3. Restart your system. This causes the system to find and use the new DLL file in *c:\junk* instead of the old one.
4. Copy the new DLL to its normal home. A typical place is *c:\os2\dll* for system DLL files, but be sure to replace the old, obsolete version of the DLL.
5. Remove the *c:\junk* directory name added in step 2 from the LIBPATH statement.
6. Restart your system.
7. Delete the *c:\junk* directory and its now unneeded contents, as created in Step 1.

automatically look in the current directory to satisfy DLL requests, which is why the **LIBPATH** statement always begins with a period in the first posi-

tion—the period tells OS/2 to always look in the currently active directory first.

OS/2 contains a second set of path

statements for DOS and Win-OS/2 VDMs. These paths are set in the root's *autoexec.bat* file. You can modify the **PATH** and **DPATH** commands by editing that file, and all DOS and Win-OS/2 sessions will start with those settings (unless you tell a particular DOS program to use a different batch file instead, by changing its **DOS_AUTOEXEC** setting).

Just look around

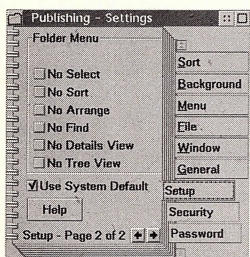
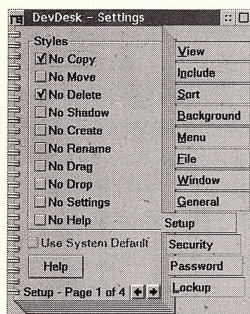
Finding your way around OS/2's directory structure isn't all that hard, provided you understand how it works and what to look for. We've covered the basics: equipped with a copy of Table 1, the next step is to start exploring.

Bruce Hallberg is author and co-author of several OS/2 books, including the latest edition of Inside OS/2, Maximizing OS/2, OS/2 for Non-Nerds, Byte's OS/2 Programmer's Cookbook, and the forthcoming OS/2 Engineer Certification Handbook. You can contact him at 76376.515@compuserve.com.

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Reader Service No. 22

Remote client access

KopyKat 1.0. BY ESTHER SCHINDLER

The Schindler Home for Wayward Programmers is on the outskirts of the city. We cherish many things about our remoteness, including the unspoiled desert and the owl that moved into our saguaro. But one thing we don't enjoy is the physical distance to our clients. One of them is a 45-minute drive to the south; another has the nerve to be 40 miles away, a full hour away by car.

The southernmost client called me recently, complaining "John's cc:Mail icon has disappeared!" After some phone-based questions and answers, it seemed that the program object was well and truly gone. I drove to the client's office and, once I saw the screen, I could tell exactly what went wrong. It took less than three minutes to fix the problem—and an hour and a half in transit time. If I had owned a copy of Hilgraeve's KopyKat, I could have saved myself a trip.

Remote access for OS/2

KopyKat lets you connect to a remote computer using OS/2. The desktop of the remote PC appears in a window on your own desktop. You can use the remote PC as if you were actually there, sitting at the keyboard, using the mouse, and running programs.

KopyKat is really two programs: Kopy (the person dialing in) and Kat (the remote PC). You can connect over a modem link, over a network using NetBIOS, or using a direct serial connection.

Let's use the example of my southern client, again, to see how the situation would have transpired if we had

each had KopyKat installed. Dottie would call me to report the problem. She would start Kat on John's machine, optionally providing a password so that nobody else could unsuspectingly dial into his machine. Kat would set up John's modem to wait for a call. Meanwhile, I would start Kopy on my system, and instruct it to call John's computer. The modems would connect, and, *voila!* I'd see John's desktop in a window. John's mouse would be live, so he could double-click and point to show me what's wrong. I could see his mouse, as well as a mine, a bright-red mouse pointer (invisible to him). I could double-click on his icons, run applications, and do anything I would do if I were sitting next to him. Three minutes later, the problem would be fixed, and I could disconnect.

If John and I were both on a network that supported NetBIOS (primarily Netware or LAN Server) I could have done the same thing, without a modem, at somewhat faster speeds.

This is incredibly powerful stuff,

especially for those of us who hate fighting rush-hour traffic.

How well does it work?

Using Practical Peripherals 14.4 kbps modems, I tested KopyKat with DOS, Windows, and OS/2 applications. I used DOS applications seamlessly and in full-screen. (The system I used for testing has an 8514a video card, which is unsupported in Windows full-screen in this version; that weakness should soon be corrected.) Everything ran quite well, if sometimes slowly, based on my modem speed.

KopyKat does a good job of updating the screen, apparently only updating the portions that change. With the DOS applications in particular, the updates occurred very quickly. Graphics-intensive applications can be poky, but never so much so that I'd prefer driving crosstown.

To speed up screen rewrites, KopyKat provides a monochrome mode. Some applications aren't very readable this way, but it works fine for most graphical OS/2 programs. If I expected to be providing support via KopyKat regularly, I might recommend that the Kat PC use a lower video resolution, so that KopyKat would need to send fewer bits over the phone line (I used 1,024x768 in all my tests).

Kopy will let you monitor the remote workstation instead of controlling it. Password support is optional, and the password can be hidden. The Kat PC has the option of permitting the Kopy to reboot the system. If you're making changes to

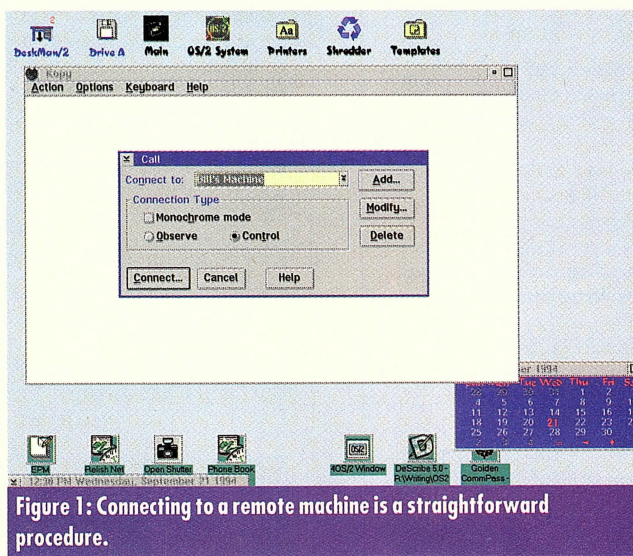


Figure 1: Connecting to a remote machine is a straightforward procedure.

Review

someone's *config.sys*, this ability is more than handy. (Of course, you'd need to make sure that KopyKat was put in the startup folder before you did so!)

While you're using KopyKat, the keys you use to control your own desktop (<Alt+F4>, <Ctrl+Home>, and so on) continue to control *your* desktop. After all, you may want to switch to another application while you're monitoring or controlling another system. KopyKat lets you send the control keys to the Kat PC by choosing a menu option or by configuring KopyKat to use your control keys to the Kat.

To use KopyKat effectively, you'll want as fast a modem as you can afford, since the screen gets repainted often. If you have been looking for an excuse to upgrade to a 28.8kbps modem, this is it.

The user interface is very well designed. I've supported dozens of end-users whose grasp of computer concepts was infinitesimally small. I don't think any of them would be lost using KopyKat. The icons are cute (I'm a sucker for a pretty icon) and, moreover, they're useful; the cat-face turns red when the PC is connected.

The manual is clear and understandable, and includes a worthwhile introduction to OS/2. This is especially valuable, since it's likely that you'll use KopyKat to communicate with remote sites where the employees don't necessarily know OS/2 well and, almost literally, you aren't there to teach them.

Sanity claws

The only rough spot is KopyKat's installation. Hilgraeve is using the IBM-licensed Install program,

and I had a cat fight with two of the systems on which I installed KopyKat. Hilgraeve says it's addressing this issue—they may have done so by the time you read this review.

This release is version 1.0 and, as such, it's an excellent start. However, this version is lacking a few significant features. The major one of these is a lack of file-transfer support. If I had discovered that John's system needed a file that resided on my computer, I couldn't have used KopyKat to send it to him. I would have had to hang up, and reconnect using ordinary communications software. We write code for the west-side client, so the ability to transfer files back and forth is an essen-

tial feature.

One sign that I like a program is that I immediately start wishing for enhancements; it means I've made an emotional commitment. In addition to file-transfer support, I'd like KopyKat to identify who is dialing in to the Kat PC. Perhaps a future version can provide a pop-up chat window; not everyone has two telephone lines. I'd like the program to create a log file for consultants, so we can easily figure out how much time to bill the client for the "on-site" service. These features belong in a version 2.0, however, so I don't fault Hilgraeve for not having them yet. I just like the program well enough that I wish they were there.

This application has a solid foundation, and it should evolve nicely. If you support end-users as a consultant or help-desk technician, or you simply want to be able to work from home, KopyKat should definitely be in your bag of tricks.

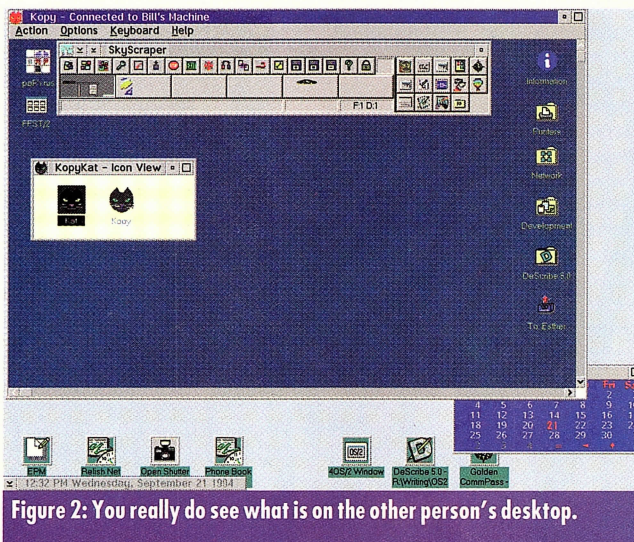


Figure 2: You really do see what is on the other person's desktop.

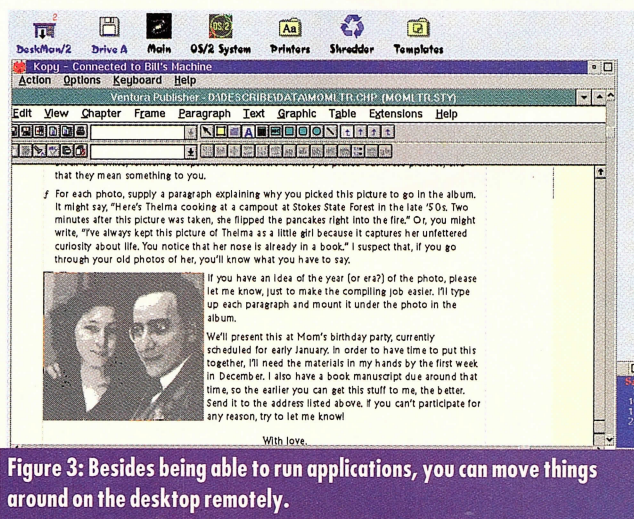


Figure 3: Besides being able to run applications, you can move things around on the desktop remotely.

Esther Schindler is a computer consultant and writer. She is a contributing editor to OS/2 Magazine, the sysop of the Ziffnet Executives On-line Forum on CompuServe, and coauthor of Teach Yourself REXX in 21 Days, from Sams Publishing. You can contact her at 72241,1417@compuserve.com.

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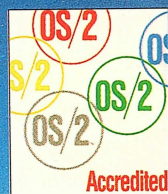
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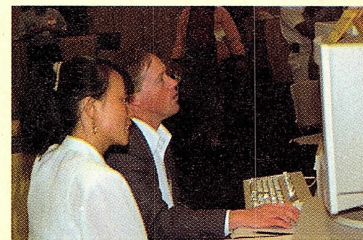
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PM Patrol 3.0

Keep an eye on your resources

MSR Development is announcing the latest version of their OS/2 resource-management utility, PM Patrol. The program monitors shared memory attributes, active dynamic link libraries, virtual memory use, and helps manage and kill tasks. It also includes a program launch bar, a pointer modifier, and C/C++ API interface. PM Patrol sells for \$99.95. Contact MSR at (409) 564-1862 or fax (409) 560-5868.

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CC-Rider 5.1

C coding made easy

Western Wares is announcing the latest OS/2 version of their cross-platform programming utility, CC-Rider, which is used for browsing, analyzing, editing, and documenting C and C++ code. A visual source code brows-

er, function/data caller trees, and a built-in hypertext source code editor are new to this release. An API library is provided to help write custom tools for this application environment that also supports Windows 3.1, Win32s, Windows NT, and DOS. CC-Rider is available for \$549 for the Deluxe Edition, which supports all platforms and \$129 for the OS/2 version. Call Western Wares at (303) 327-4898 or fax (303) 327-4479.

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Kensington Thinking Mouse

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Kensington released their new four-button mouse, which includes OS/2 drivers. The Thinking Mouse can map single-click, double-click, and other mouse behavior options to any of the four buttons or to any two-button combinations. It has a suggested retail price of \$89.95 for the serial and PS/2 version, and \$119.95 for a version that includes an interface card. Call Kensington at (800) 535-4242, (415) 572-2700, or fax (415) 572-9675.

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4DOS 5.5 and 4OS/2 2.5

For the command-line junkie

JP Software released the latest version of their command-line replacement products, 4DOS and 4OS/2. The new versions contain more than 50 new commands, including the FFIND command, which finds files and text within files. A series of enhancements to the batch-file language have also been added, including keystroke detection, binary file reads and writes, string formatting, and conditional calculations.

4OS/2 2.5 and 4DOS 5.5 are priced at \$49 each or you can purchase both for \$69. Call JP Software at (617) 646-3975 or fax (617) 646-0904.

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i++ Class Library

C++-based OS/2 development

Virtual Software is releasing their C++ class library—the i++ Class Library. It uses its own kernel for the construction and destruction of C++ classes and includes the OS/2 Control Program, Presentation Manager, and Graphics Programming Interfaces. It has an on-line programming reference, 120 code samples, and supports IBM's C Set++ 2.01 and Borland C++ 1.5 compilers. The i++ Class Library is available for \$499 AUD. Call Virtual Software in Australia at 61 (414) 563-256 or fax 61 (414) 571-695.

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Blowfish OS/2 CD-ROM

New CD compilation

Pacific HiTech is announcing the release of a new CD-ROM that is filled with shareware and freeware OS/2 programs. The Blowfish OS/2 CD-ROM has an OS/2 front end for viewing the HIP-PIX shell and programming environment. System utilities on the disc include communication programs, editors, file viewers, daily use utilities, and graphics viewers. It also includes science programs, process-management utilities, printing/fax utilities, and fonts. The Blowfish OS/2 CD-ROM retails for \$19.95. Contact Pacific HiTech at (800) 765-8369, (801) 261-1024, or fax (801) 261-0310.

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Just Announced

**Late-Breaking
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TechBridge Builder 1.2

DB2 front end for Warp

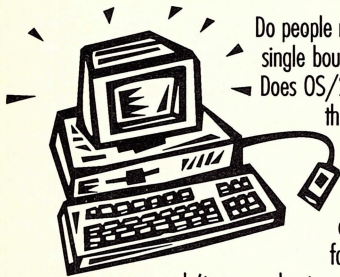
TechBridge Technology announced the latest version of TechBridge

Builder, their DB2 front-end tool. The new version includes 1.2 master detail data display, notebook controls for use in forms, and automated display of three-dimensional graphics on a query

form. Support for OS/2 Warp 3.0 is also included. The TechBridge Builder Enterprise Edition, which can access any database in the DB2 family, including Oracle and 50 others, through EDA/SQL is \$2,850. The Bronze Edition that can only access DB2 databases is \$1,250. Call TechBridge at (416) 222-8998 or fax (416) 222-0168.

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A new OS/2 file manager

Softouch systems announced the first release of their new file-management utility, FileStar/2. This utility, similar to the Windows File Manager, can copy, move, rename, and delete files. It also provides disk information, such as file sizes, disk space, and file attributes. It is integrated with the included InfoZIP archiving programs that can view and extract files that are stored in Zip format. The introductory single-user price is \$59. Call SoftTouch at (405) 947-8085 or fax (405) 632-6537.

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Syτος Premium 2.1

OS/2 Backup

Sytron Corp. announced the updated version of their OS/2 backup product, Syτος Premium. This version was designed to work better with OS/2 Warp and LAN Server 4.0. It offers more command-line switches, an updated version of the Syτος Rebound feature, and Autoloader support for the Techmar ProStack 48 and 96. It has a suggested retail price of \$299, but Syτος Premium owners can upgrade for free and Syτος Plus users can upgrade for \$99. Call Sytron at (800) 877-0016, (508) 898-0100, or fax (508) 898-0001.

READER SERVICE NO. 170

Drag & Drop with REXX

USING REXX TO CREATE AND MANIPULATE PROGRAM OBJECTS. BY DICK GORAN



Dragging and dropping an object on a REXX program is a topic that concerns many REXX programmers—particularly those who are more familiar with command-line or “ugly mode” REXX programming. Listing 1 contains a simple REXX program that can be used to illustrate each case that I will be describing in this column. You might want to take this opportunity to temporarily create a program object on your Desktop that can be used to launch the *9501LS01* REXX program that is shown in Listing 1. At the same time, create a shadow of a test file on your Desktop in proximity to the program object, so you can conveniently drop it on the program object to verify the test results. Any *readme.doc* file would be a good choice. In the explanations I use, the full file system name of the data file object that I dropped on the program object is *g:\text\readme.doc*.

A simple method for creating a shadow of a file is to open either an icon or details view of a drive or folder and drag the file's icon to the Desktop while holding down the <Ctrl> and <Shift> keys.

To create the program object, open the Templates folder, which is normally located within the OS/2 System folder, and drag a Program object template to your Desktop. A Settings Notebook, as shown in Figure 1, will be created and opened on the Desktop for the new program object. The required Path and File Name field must contain the full file system name (drive, path, file name, and file extension) of your newly created program (in this case, *9505ls01.cmd*) preceded by the drive

and path name where you created the REXX program. The optional Parameters field is the field that controls what will be passed to the REXX program when it is launched.

The parameters that are passed to the REXX program are in the same format as they would be if the program was launched from the command line with the parameters following the program name. OS/2 REXX treats all command-line data as a single string.

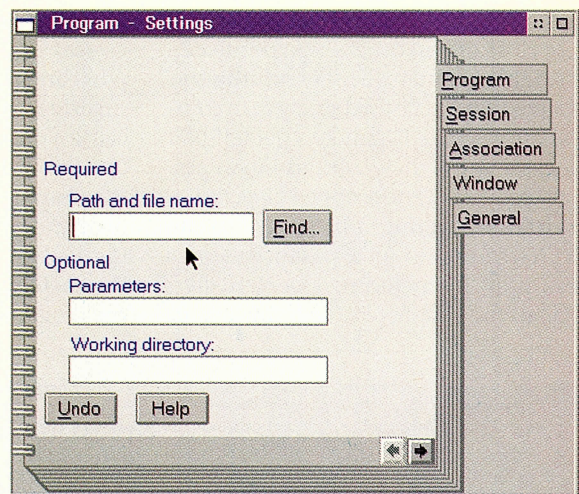


Figure 1: WPPProgram Settings Notebook.

Listing 1: *9505ls01.cmd*.

```
/*-----*\
| 9505LS01.CMD - Used to test the handling of dropped objects |
\*-----*/
parse ARG string /* assign calling parameters to string */
number = ARG() /* get number of parameters passed */

/* echo number, length, and value of calling parameters */
say 'Nbr =' number ||
', Length = ' || LENGTH( string ) ||
', Value = ' || string

/* show hexadecimal value of calling parameters */
if LENGTH( string ) > 0 then
do
say "" || C2X( string ) || "x"
end
say 'Press <Enter> to end program'
pull reply /* dummy read just to hold screen */
exit
```


Because of that, dropping an object on a program object will cause the parameter data to be treated in a consistent manner. Regardless of how many tokens exist in the parameters that are passed to the program, the ARG() built-in function will always return a value of 1. If nothing is specified in the Parameters field in the Settings Notebook, the full file system name (drive, path, and file name) is passed to the REXX program. In the case of my example, this string would be named: `g:\text\readme.doc`. The parameter string will appear in the same case that it appears in the file's directory entry. For FAT drives, the file system name will always be uppercase. For HPFS drives, the case can be mixed.

Table 1 contains a list of substitution values that can be used singly or in combination in the Parameters field. If you include any of these substitution values, any portion of the dropped object's file system name might be passed to the REXX program as a parameter. For example, by including a percent sign (%) in the Parameters field, the default

value of the full file system name is inhibited. By including `%**D`, only the drive letter followed by a colon (:) is passed to the REXX program. Dropping the `readme.doc` file icon on the REXX program and including the substitution values `%**D`, `%**P`, `%**N`, and `%**E` in the Parameters field causes the REXX program to start with the following parameter string:

```
g: g:\temp\ readme.doc
```

A left and right bracket pair ([]) can be inserted in the Parameters field to cause a dialogue box, for example, the one shown in Figure 2, to pop up when the file object is dropped on the REXX program object. The title of the dialogue box will always be Specify Parameters and the file system name of the program object will be on line one.

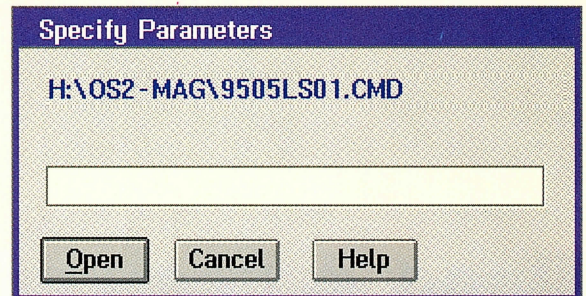


Figure 2: Launching object directly.

Any characters that appear between the brackets will show on line two of the dialogue box as a prompt. The substitution values can also be used both outside of and within the prompt string. If a prompt is used in combination with other characters in the Parameters field, any characters that are entered into the list-entry field of the dialogue box will be passed to the REXX program in the same relative position that the bracketed prompt string appeared. For example, using our sample file and program object, with a Parameters field of `1[234]5`, line two of the dialogue box will be 234. If you type in `abc` and select Open, the following string:

```
1abc2 G:\TEXT\README.DOC
```

will be passed to the REXX program.

Some undocumented combinations of characters have special meanings when they are used in the Parameters field. One example is that a string that contains a caret (^) and a percent sign (%) results in a line-feed character ('OA'x) being passed to the REXX program. I will leave it to the readers to detect any other undocumented values. You are welcome to e-mail them to me to be included in a future column.

REXX happening

The 6th annual REXX Symposium will be hosted by the Stanford Linear Accelerator Center in Stanford, Calif. from May 1-3, 1995. Registration is required, but you won't be charged a registration fee. Questions should be directed to any member of the Symposium committee who is shown in Table 2.

At this time, the full program is still in

Table 1: Parameter Substitution Values.

% indicates that no parameters (including the default full file system name) are to be passed to the program.

<code>%*</code>	Insert the full file system name.
<code>%**P</code>	Insert drive and path information without the last backslash (\).
<code>%**D</code>	Insert drive with ':' or UNC name.
<code>%**N</code>	Insert file name without extension.
<code>%**F</code>	Insert file name with extension.
<code>%**E</code>	Insert extension without leading dot. In HPFS, the extension always comes after the last dot.
<code>[]</code>	Results in the user being prompted, via a dialogue box, to enter a parameter string. The dialogue box contains the title "Specify Parameters" and shows the full file system name of the program. (The results are identical whether there are, or are not, any spaces between the brackets.)
<code>[prompt]</code>	Same as with brackets above along with prompt being added to the dialogue box.

Note: If you try to start a program from the pop-up menu of a folder and the program does not start or displays an error message, you can stop the name of the folder from being sent to the program by placing a percent sign (%) in the parameter field.

From the third edition of the REXX Reference Summary Handbook

Table 2: REXX Symposium Committee.

Name	Phone	E-mail
Cathie Dager	(415) 926-2904	cathie@slac.stanford.edu
Forrest Garnett	(408) 256-9495	garnett@vnet.ibm.com
Pam Taylor	(708) 696-4800	pjt@wrkgrp.com
James Weissman		jhw@shell.portal.com

RESOURCES:

REXX Symposium Registration

Mary Crume
SLAC MS 97
P.O. Box 4349
Palo Alto, CA 94309
Fax: (415) 926-3329
mjcrume@slac.stanford.edu
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the planning stages, however, presentations are expected to include Object REXX, application portability and migration of applications to new platforms, the ANSI Standard for the REXX language, applications and products written in REXX or using REXX as a scripting language, and REXX in new environments. According to the association's announcement, the program will be expanded this year to include a series of tutorials that span the educational needs of REXX programmers from the begin-

ner to the experienced programmer who is looking for new tips and techniques.

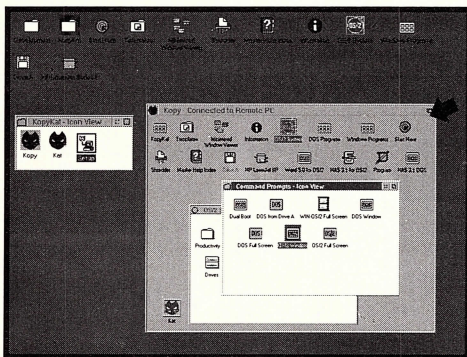
The keynote speaker for the conference is Mike Cowlshaw, who created REXX. He will be present throughout the Symposium and at the annual meeting of the REXX Language Association (RexxLA) on Monday evening, May 1, 1995, which will follow the ANSI Standards Committee for REXX (X3J18) meeting on April 29-30, 1995. This meeting is open to the public.

Dick Goran is the author of the REXX Reference Summary Handbook, an OS/2 Reference. He has been in the computer industry since 1961 and was in the IBM mainframe systems software development business until 1987. He teaches OS/2 REXX to corporate clients and lectures on OS/2. He can be reached via e-mail at 71154.2002@compuserve.com.

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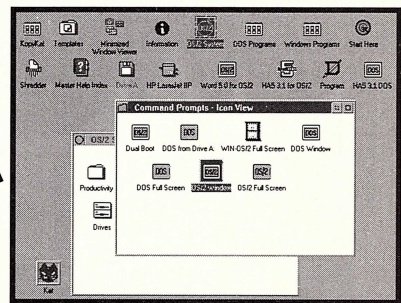
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IPF Shareware Library

**.INF FILES CONTAIN MUCH MORE
THAN ON-LINE HELP AND TUTORIALS. BY DICK CONKLIN**

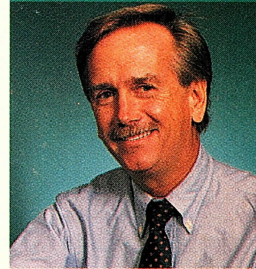


Table 1: .Inf shareware files.

OS/2 General Information

Filename	Source	Description
Awards.zip	OS2SHARE	OS/2 trade press clippings and awards
Hhgos2_8.zip	OS2SHARE	Bi-weekly summary of OS/2 news and events

Getting Started with OS/2

Filename	Source	Description
800inf.zip	OS2SHARE	IBM support programs and phone numbers
Insin2.zip	OS2SUP	OS/2 installation hints and <i>readme</i> files
Lnchwp.zip	OS2USER	Launching objects on the OS/2 Desktop
Pmhints1.zip	OS2SHARE	OS/2 PM programming tutorial
Pridepc.zip	OS2SHARE	OS/2 Desktop demonstration
Sominf.zip	OS2SHARE	SOM and Workplace Shell slides from IBM class
Tricks5.zip	OS2SHARE	Stupid OS/2 tricks, number 5

Newsletters

Filename	Source	Description
Bacrff.inf	OS2USER	Meetings of the OS/2 Bay Area User Group
Dsnxxi.zip	OS2SHARE	IBM Developer Support News (xx=issue number)
Edmi1.zip	OS2DF1	EDM/2: Electronic Developer's Magazine for OS/2
Gzt794.zip	OS2USER	Midwestern OS/2ers Gazette
PL494.inf	OS2SHARE	PL/1 Connection Newsletter
Vdg693.zip	OS2DF1	Victorian Independent OS/2 Developer Newsletter

Improving Performance

Filename	Source	Description
21perf.zip	OS2SUP	OS/2 2.1 performance improvements
21tune.zip	OS2SUP	OS/2 2.1 end-user tuning tips

Product Catalogs and Documentation

Filename	Source	Description
Aboutpds.zip	OS2SHARE	Prominere development system electronic brochure
Ae2952.zip	OS2SHARE	OS/2 PL/1 presentation
Cdscat.zip	OS2USER	Custom design software catalog
Dapinf.zip	OS2DF2	IBM Developer's Assistance Program tools library
Db22vein.zip	OS2SHARE	DB2/2 solutions directory
Devinf.zip	OS2DF2	IBM Developer's Connection CD-ROM library
Dgby1294.zip	OS2SHARE	Dogboy OS/2 product catalog
Epmk.zip	OS2SHARE	OS/2 EPM editor user guide and technical reference
Hact.zip	OS2SHARE	Hyperact Inc. product catalog

One of my favorite OS/2 features is the Information Presentation Facility (IPF)—OS/2's built-in hypertext-like facility that displays text and graphics in an easy-to-read book format with an index and search routine. IPF was initially created so that programmers could include on-line help and tutorials with their applications, which it still is, but you'll find that IPF is now used for much more.

Are you trying to find a fix for a bug that keeps popping up? Look in the Authorized Program Analysis Reports (APAR) file. Are you shopping for a software application? You might find a product catalog, a copy of the product's on-line documentation, and a demonstration—all in IPF format. You'll also find newsletters for users and developers, listings of OS/2 bulletin-board systems, and plenty of tips and techniques.

Bugs, BBSs, and the Bible

If your interests range beyond the world of OS/2, look for a copy of the Federalist Papers, the Sonnets of William Shakespeare, and the King James Version of the Bible—all available as IPF files.

If you can't find an article you saw in an old issue of *OS/2 Magazine*, look in the OS/2 Periodicals Database (*ma9505.zip* for the May 1995 version). Robert Simpson maintains this useful directory of articles, columns, and papers that have appeared in most OS/2 and other trade press publications.

Just point and click

IPF files are identified by their *.inf* suffix. You could use the OS/2 VIEW command to read them. If the file is named

conch.inf, you would enter **view conch**. You can set up your OS/2 system so that each *.inf* file is identified by the IPF book icon and can be ready to be started with a click of your mouse. Open your *c:\os2* directory and click on the *view.exe* icon with mouse-button 2. Select Settings and the Associations tab. Under New Name, enter ***.inf** and select Add>> to include it in the Current Names list. Then, close the file. To test it, open your *c:\os2\book* directory. You'll find several *.inf* files that should be identified by the book icon. If you point and click on any of them, the document will appear.

Table 1 lists some of the many OS/2 IPF shareware files that can be found on on-line systems and BBSs. Each entry references one of the source libraries that it was found in, but many of the files can be found in multiple places. Look around for *.inf* files about your favorite topics and start building your own reference library. Table 2 contains a key to the source codes that are used in Table 1.

Table 1: .Infshareware files(cont'd).

Product Catalogs and Documentation (cont'd)

Filename	Source	Description
<i>Lorain.zip</i>	OS2SHARE	LoraBBS manual
<i>Lpex.zip</i>	OS2SHARE	LPEX live parsing editor information
<i>Os2show.inf</i>	OS2SHARE	OS/2 product showcase
<i>Ps2asst1.zip</i>	OS2SHARE	IBM Personal Systems Assistant
<i>Tvfs.zip</i>	OS2SHARE	Toronto virtual file system information
<i>User.inf</i>	IBMBBS	Guide to Multinet BBS

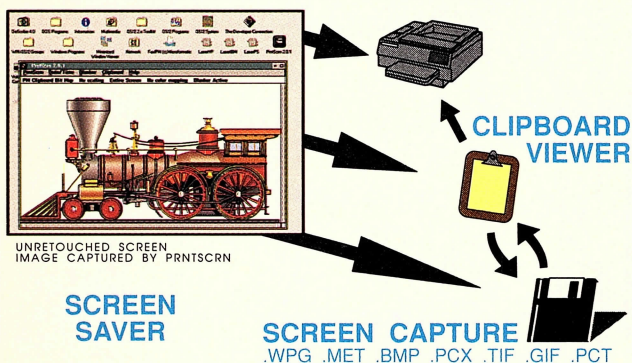
Reference Information

Filename	Source	Description
<i>Dosqps.zip</i>	OS2DF1	DosQProcStatus API documentation
<i>Dspmdinf.exe</i>	IBMBBS	MWave modem information
<i>lfsinf.zip</i>	OS2SHARE	OS/2 installable file system driver-interface information
<i>Rexttt.exe</i>	OS2USER	REXX tips and techniques (in German)

Information Sources

Filename	Source	Description
<i>Dcbb1294.zip</i>	OS2SHARE	BBS listing
<i>Hobbes1.zip</i>	OS2SHARE	OS/2 files on Hobbes
<i>Ibm-inf.zip</i>	OS2SHARE	IBM Canada BBS file listing

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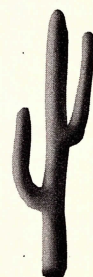
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Table 1: .Inf shareware files(cont'd).

Information Sources

Filename	Source	Description
Maxxxx.zip	OS2DF2	OS/2 Periodicals Database (XXXX=yymm, as in 9505 for May 95)
Os2share.zip	OS2SHARE	OS/2 shareware BBS file listing
Warpin.zip	OS2SUP	All OS/2 Warp tip files

Utilities

Filename	Source	Description
Getinf.zip	OS2USER	Builds a .inf file catalog
Inform.exe	OS2DF1	INFormer program, which scans all drives for .inf files

Bugs that IBM knows about

Filename	Source	Description
20apr1.zip	OS2SUP	OS/2 2.0 APARS (also see 20APR2 and 3)
21apr1.zip	OS2SUP	OS/2 2.1 APARS (also see 21APR2 and 3)
Amifix.inf	OS2SHARE	AmiPro 3.0 workaround for SYS3175 error
Cmapr1.zip	OS2SUP	OS/2 Communications Manager/2 APARS
Dbapr1.zip	OS2SUP	DB/2 APARS
Dbmtra.zip	OS2SHARE	OS/2 trace facilities
Dcapr1.zip	OS2SUP	DCE APARS
Esapr1.zip	OS2SUP	OS/2 extended services APARS
Ldapr1.zip	OS2SUP	LAN distance APARS
Lsapr1.zip	OS2SUP	LAN server APARS
Mmapr1.zip	OS2SUP	MultiMedia APARS
Ntapr1.zip	OS2SUP	Network Transport Services/2 APARS
Nwapr1.zip	OS2SUP	Netware APARS
Osapar.zip	OS2SUP	General information about OS/2 APARS
Tcapr1.inf	OS2SUP	TCP/IP APARS
Tkapr1.inf	OS2SUP	OS/2 Toolkit, C Set/2, C Set++, Workframe/2 APARS
Wr7020.inf	OS2DF2	Network Transport Services/2 LAPS APARS

Miscellaneous

Filename	Source	Description
Federali.zip	OS2SHARE	Federalist Papers
Hpy11os2.zip	OS2SHARE	Happyman Metacomix
Irmbook.zip	OS2SHARE	IRM Revolution (Book, MBA Press)
Jargon.zip	OS2USER	Jargon v2.9.9: Hacker vocabulary and lore
Kjv_100.zip	OS2SHARE	Bible: King James Version
Rj0256.zip	OS2DF1	Metal art catalog example
Sonnet.zip	OS2USER	William Shakespeare's Sonnets

Finding Internet Files.

Most of the .inf files listed in Table 1 are available on the Internet at the following ftp sites:

- At [ftp.cdrom.com](ftp://ftp.cdrom.com) in the /pub/os2 directory, try the /32bit/info, /ibm/info, and /16bit/info directories.
- At hobbes.nmsu.edu in the /pub/os2 directory, try the /info, /news1tr, and /ibm/info directories.
- At software.watson.ibm.com in the /pub/os2 directory, try both the /info and /os2fixes directories.

Table 2: Key to Source Codes.

Source	Description	Go to
OS2USER	CompuServe OS/2 User Forum	GO OS2USER
OS2SUP	CompuServe OS/2 Support Forum	GO OS2SUP
OS2DF1	CompuServe OS/2 Developer 1 Forum	GO OS2DF1
OS2DF2	CompuServe OS/2 Developer 2 Forum	GO OS2DF2
OS2AVEN	CompuServe OS/2 Vendor A Forum	GO OS2AVEN
OS2BVEN	CompuServe OS/2 Vendor B Forum	GO OS2BVEN
OS2SHARE	OS/2 Shareware BBS	(703) 385-4325
IBMBS	IBM Technical Support BBS	(919) 517-0001

Dick Conklin is a contributing editor to OS/2 Magazine, editor of OS/2 Developer, and author of three OS/2 books. He can be reached at CompuServe 76711,1005 or Internet os2mag@vnet.ibm.com.

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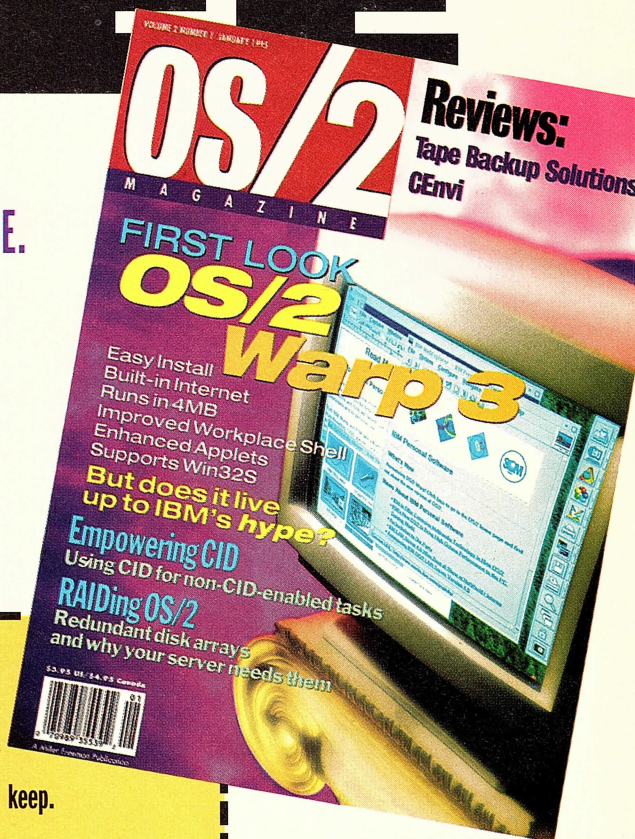
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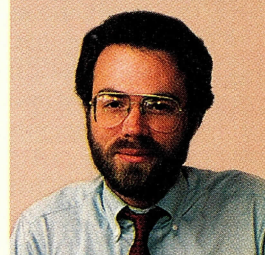


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Back to Boot Hill

DUAL BOOT AND BOOT MANAGER, REVISITED. BY MARK MINASI



I must confess, I wasn't prepared for the vast quantity of mail I got in response to two columns I wrote recently, "Dueling with Dual Boot" (January 1995, pp. 62-63) and "Battling with Boot Manager" (February 1995, pp. 66-67). I've been writing for computer magazines since 1987 and the only column that produced anything near that level of feedback was one I wrote a few years ago about the A20 handler in *himem.sys*. (Please don't send me mail about that column; I have no idea where I put it.) As a result, I'll focus on responses to your questions in this month's column.

Approximately 200 of you wrote to tell me that I was wrong about Boot Manager when I said that it could not duplicate Dual Boot's automatic last OS feature. I said that what I liked about dual boot was that once I set the system to boot DOS, it booted DOS automatically from that point on. Once you type **boot /os2**, the system will automatically boot to OS/2. I claimed that the value was that I didn't have to babysit the system while it booted, waiting for the Boot Manager screen. I said that I thought it would be nice if the Boot Manager gave you the option of automatically booting the last operating system (OS) that was booted, unless you overrode it within the timer period.

Listing everyone who said I was wrong ("wrong, so wrong"—as my staff likes to put it) would take up all of this column's space. So, for anyone who doesn't already know, I will explain how to make Boot Manager automatically boot the last OS that was booted.

While in FDISK, you can highlight any partition and press <Enter> to bring up the Options menu, which gives you the following options: Install Boot Manager, Create partition, Add to

Boot Manager menu, Change partition name, Assign c: partition, Set startup values, Remove from Boot Manager menu, Delete partition, Set installable, and Make startable. When you install OS/2 and tell the installation program that you want to choose a partition to install the system onto, you'll see the FDISK screen. Many people call it the Boot Manager, but it's not. Boot Manager is the blue screen that you see when you boot up. Boot Manager is controlled by FDISK, but it's the FDISK screen that you're actually seeing. You control Boot Manager, once you've got the system set up, via FDISK.

Open a command window, type **fdisk**, and press <Enter>. If you select Set Startup Values, you will see a small dialog box labeled Startup Values that asks you which operating system should be the default startup system, whether or not to use the timer, and how long the timer should wait—if you've activated it. The field for Default will contain the partition that you highlighted before pressing <Enter>. Logically, that becomes the default OS and stays that way until you choose another default OS.

You might think that changing the default OS requires firing up FDISK under OS/2, but it doesn't. If you leave the Default field blank (as so many readers told me), Boot Manager will remember the last OS that you booted and re-load it. That's a nice solution, of course, but it presents a problem—what if you already set a partition as the default? How do you tell Boot Manager to forget that a default already exists?

You might be able to do it another way (if so, I'm sure the Boca Street Irregulars will let me know), but the easiest way that I know of to tell Boot

Manager not to use a default is to simply remove it and reinstall. If that sounds like a lot of work, don't worry—it isn't.

Start FDISK from inside OS/2. Highlight the Boot Manager partition and press <Enter>. You'll see the Options menu, which includes the Delete partition. Delete the Boot Manager partition. You'll have 1MB free space with a status of None. Press <Enter> again and choose Install Boot Manager. That space will become a partition that has a status of Startable, the access type of Primary, and a file system (FS) type of BOOT MANAGER (I guess those IBM mainframe guys are still hanging around the programming shops; somebody ought to tell them about lowercase).

You'll need to rebuild the information that Boot Manager needs. Boot Manager should have remembered which partitions are bootable. If it has forgotten about a bootable partition, highlight it and choose Add to Boot Manager menu to set the partition as bootable. Give it a name and include it in the Boot Manager menu.

I also got quite a few letters that asked where Boot Manager places itself and what is the best way to install Boot Manager if it's not already installed. I recommended that you put Boot Manager at the end of a drive, instead of at the beginning. Some people reported that Boot Manager didn't give them a choice and just placed itself at the beginning of the drive. I haven't been able to reproduce it myself, but after talking to people who have the problem, I noticed a common thread—an oddball disk controller.

The "Enhanced" IDE controllers support big drives—drives that are bigger than DOS can handle. Actually, it's

not DOS that can't handle them, it's really BIOS. BIOS can only support 1,024 cylinders and 64 sectors on a disk. We only put 512 bytes on a sector because that's the way we've always done it and many BIOS have trouble believing that their drives have more than 16 heads. 1,024 multiplied by 64 multiplied by one half multiplied by 16 yields more than a 500MB drive—the largest safe IDE drive to buy.

Because 1GB drives are priced as low as about \$450, many people are trying to install them and make them work with OS/2. But, FDISK plays it safe and puts the Boot Manager on the part of the disk that it knows it can get to—the first megabyte! (Let me tell you about how I bought a 32MB disk in 1983 for \$929 and thought it was a great deal...)

Many people wrote to ask me how to add Boot Manager to a system. It's easy to add Boot Manager if you have a little free space on your hard disk. Start up FDISK from inside a command window in OS/2, press <Enter> to get the Options menu, and select Install Boot Manager. If you have the first and last

megabyte free, it will ask you which one to place the Boot Manager in. Again, if you're offered a choice, take the end of the disk.

What if you don't have any free space? If that's the case, you're up against an old problem—how do you re-partition a drive? You can always re-partition a drive by destroying an existing partition or partitions and building new partitions. But, if you destroy an existing partition, you lose all of the data on it. Let me rephrase that: If you destroy an existing partition on your hard disk so you can re-partition (perhaps to install Boot Manager), you will lose any data on the partition(s) that you destroyed. If you have multiple partitions on your drive, you can destroy one partition without losing the data on the other partitions.

I know it sounds bad, but I've heard that a product called PartitionMagic might help with this problem. I haven't seen it yet, but I hear that this product will allow you to change partition sizes with just a mouse click or two and without any loss of data. It will also

convert FAT partitions to HPFS partitions and leave the data intact. The price is \$129.95, which I think is expensive for a "use it once in a while" utility. For that kind of money, you could hire a kid to back up your files and—nah, maybe just buy the utility.

Mark Minasi has been a consultant and educator in the fields of advanced PC operating platforms and PC technology since 1984. He is a contributing editor for Compute, BYTE, and OS/2 Magazine. You can contact him at CompuServe 71571,264 or Internet mark@smtphost.mmco.com.

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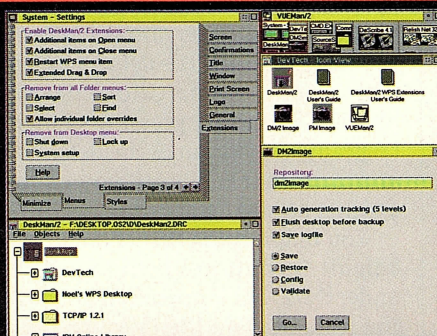
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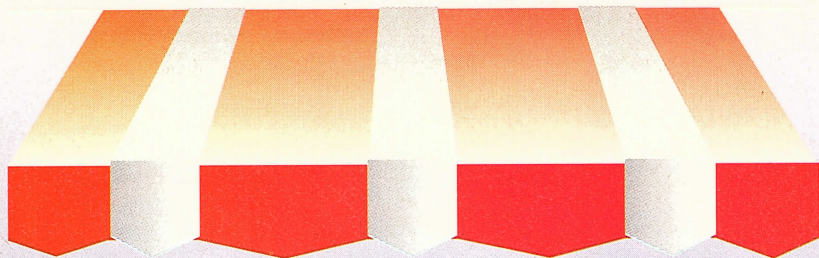
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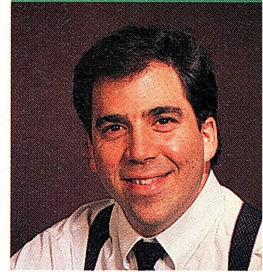
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Pass the DOS Settings, Please

LAUNCHING SPECIAL DOS SESSIONS, DOS SETTINGS, COMPAQ AERO, AND NE2000 PROBLEMS BY DAVID REICH



LAUNCHING DOS

Q: Is it possible to start virtual DOS machine sessions (VDMs) or DOS sessions from another program with specific DOS Settings?

A: Use the REXX utilities (in *rexutil.dll*) that come with OS/2 to create a Workplace Shell program-reference object. Create a program object that has the desired Settings and execute it. By following these steps, you are using the established interfaces to start sessions and not trying to pass parameters to a newly started VDM directly from REXX.

You have several alternatives and choices when writing this REXX program. Listing 1 contains a program that will create the program-reference object, start the VDM or program with the desired settings, and, when complete, vanish. You could also write the code so that the newly created program-reference object is left to be used later. Or, you could write it so that the program-reference object is created but not opened automatically.

Let's go through the code in Listing 1. You will see how it works and where you can make modifications to suit your needs. This sample program was supplied by Rick McGuire of IBM's Endicott Laboratory. Rick is one of the leading authorities on REXX, especially OS/2's implementation of REXX.

If you look at the program in Listing 1, you will see some familiar things. First, as with any OS/2 REXX program, the first line is a comment. The first executable statements load the REXX utilities, REXXUTIL. After the REXX

code is loaded, all of its utilities will be available for use by our program.

The next step is to initialize the variables that will be passed to **SysCreateObject**, which makes your own specific program-reference object. The class name is **WP_PROGRAM**, which tells the Workplace Shell (WPS) that it is a program-reference object, as opposed to, say, a folder or data-file object. The title can be anything you like. An important parameter, which comes next, is the location. Where should the WPS put this program-reference object? In this case, we are putting it in **WP_NOWHERE**, which maps to the **NOWHERE** directory on your boot drive. The location **WP_NOWHERE** is used by the shell to house transient objects or objects that do not remain.

Another example of a transient object (one that has no persistent information unless it is active) is the

course, it can be anything you like.

The next step is to specify which DOS settings you want. In this example, **DOS_FILES** is the only setting that is being modified from the default DOS settings. You could, for example, set **DPMI_MEMORY_LIMIT**. If you want to set multiple settings, you only need to string them together in the Settings variable and use a semicolon to separate them. For example, if you wanted to set **DOS_FILES** to 45 and **IDLE_SECONDS** to 60, you would use the line shown in Fragment 1.

The last thing you will set before creating the object is the variable that tells the object to open itself now. You have laid the foundation so that you can call the **SysCreateObject** utility function and pass the parameters you just finished setting up. You'll notice that the class name, title, and location are passed directly. (If you're wonder-

Fragment 1:

```
settings='SET DOS_FILES=45;SET IDLE_SECONDS=60;'
```

Window List (which you get by pressing <Ctrl+Esc>). Because you are placing this new object in **WP_NOWHERE**, it will have no persistence except when the program it refers to is running (as long as the object is open).

The next parameter or variable is the program path and file name. You would type the same thing you would if you were creating the program-reference object without the program. The next line is the program type. In this case, we are using a Windowed VDM or DOS in a window. The value for the working directory, which is specified by the **STARTUPDIR** variable, is **c:**. Of

ing about the double commas, one comma separates the next parameter and the other indicates that it is continued on the next line.) The other variables are placed together, separated by double bars (||), which combines the values you specified into the parameter value that **SysCreateObject** is expecting.

This simple task takes a little explaining, but once you understand the program, you'll have the ability to modify it and extend it to launch applications by using REXX and the system utilities with any combination of settings you need.

Listing 1: Launching one DOS program from another with specific settings.

```

/* STARTVDM.CMD: Sample code using REXXUTIL's SysCreateObject function */
/* Starts a DOS program using specific DOS VDM settings. */
/* The example invokes the PKZIP.EXE program using files setting of 45 */

/* Load the REXXUTIL functions first */

call rxfuncadd sysloadfuncs, rexxutil, sysloadfuncs
call sysloadfuncs

/* Now we will set up the parameters to be used in creating the program */
/* reference object. Then we will make the basic call of: */
/* result = SysCreateObject(classname, title, location, setup) */

classname='WPPProgram' /* This is a program ref object */

title='My DOS Program' /* Whatever title you like */

location='<WP_NOWHERE>' /* place in invisible folder */
/* This will cause the object to */
/* disappear afterwards since */
/* WP_NOWHERE is for transient */
/* Objects */

program='EXENAME=C:\PKZIP.EXE;' /* DOS program name */

type='PROGTYPE=WINDOWEDVDM;' /* type of DOS session (windowed) */

startup='STARTUPDIR=C:\;' /* startup directory */

settings='SET DOS_FILES=45;' /* required DOS settings */
/* You can do many settings at */
/* Once, separated by commas */

open='OPEN=DEFAULT;' /* open now.

/* Now we will call the REXXUTIL function to open the object.

call SysCreateObject classname, title, location,,
    program||type||startup||settings||open, 'REPLACE'

Return

```

If you want to set it to off, you would use the following string:

```
SET COM_HOLD = 0;
```

In addition, if you want to set multiple DOS device drivers by using the **DOS_DEVICE** setting, you need to separate each device-driver statement with a line-feed character, which you do with a hexadecimal 0A. For example, to load the DOS device drivers *ansi.sys* and *ega.sys*, you would specify the SET statement as shown in Fragment 2. These drives would be part of the settings variable in the program you saw in Listing 1.

WINDOWED WIN-OS/2

Q: How can I start a seamless Win-OS/2 session from the command line? Every time I type WINOS2 or PROGMAN, I get a full-screen Win-OS/2 session. I tried changing all the settings on the machine to run Win-OS/2 sessions in a DOS window, but if I start the session from the command line, it starts full-screen.

A: The Workplace Shell program objects are only effective when you start the specified program (or Win-OS/2 session, in this case) from the object itself. If you want to start a Win-OS/2 session from a command line, you have to use a special parameter on the command line. In this case, you should use the **start** command, with the /WIN parameter to make it a windowed session. (To force a full-screen session, the parameter is /FS.) You

would use the following line to start PROGMAN in a window:

```
START /WIN PROGMAN <enter>
```

Fragment 2: Setting multiple DOS device drivers.

```
'SET DOS_DEVICE=C:\DOS\ANSI.SYS'h0A'C:\DOS\EGA.SYS;'
```

More on settings

If you plan to use this method to create DOS sessions with specific settings, you should also note that many settings

require values for on and off. For example, if you want to set **COM_HOLD** to on, you would use the following string:

```
SET COM_HOLD = 1;
```


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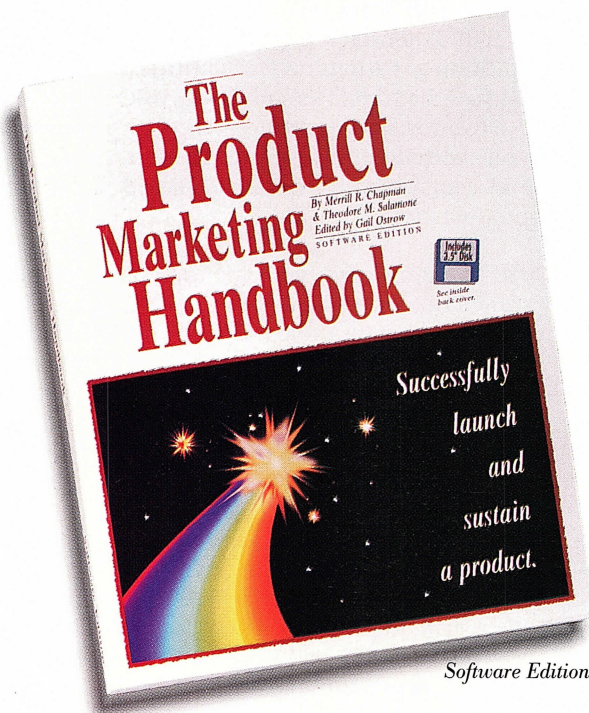
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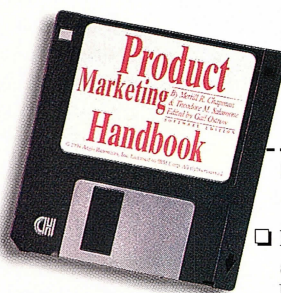
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NE2000 CARDS

Q: I have an NE2000 network card in my system. When I installed OS/2 Warp 3.0, the system refused to boot. The card used to work with earlier versions of OS/2. OS/2 runs fine if I remove the card, but I need it for my network. Can you help?

A: I reported in two earlier issues (January 1995, pp. 67-70 and February 1995, pp. 68-71) that OS/2 Warp now comes with some hardware-identifying code. This code allows the system to better identify your hardware during installation and operation and, therefore, enables more "plug-and-play" features. The code is called the Resource Manager. Fundamentally, it tests the system by "poking" it with values that are based on what hardware the Resource Manager "thinks" is installed.

Like some people, some hardware does not take kindly to being poked at and can behave unpredictably. Some versions of the NE2000 card fall into this category. It seems that newer versions of the card do not experience problems. If you are having a problem with your card, circumvent it by using the *reserve.sys* device driver, which is part of the Resource Manager (as I described in February's column). *Reserve.sys* allows you to tell the Resource Manager which things not to poke at when it initializes the system.

If you are using OS/2 Warp, add the following line to *config.sys*:

```
BASEDEV=RESERVE.SYS /IO:300,32
```

If you are using the full-pack version of OS/2 Warp with Win-OS/2, you need to use the following line:

```
BASEDEV=RESERVE.SYS /IO:300,20
```

Another possible circumvention is to "cold boot" the system, by turning the power on and then off. In general, the problem occurs when you "warm" boot the system from DOS by pressing <Ctrl+Alt+Del>. In a warm boot, the card does not physically reset and that sometimes causes problems with specific revision levels of the card.

HPFS FOR DOS APPLICATIONS

Q: I want the speed increase of the OS/2 HPFS format, but I can't seem to find out if my normal FAT-based programs will work with HPFS. I primarily use office applications, in addition to various network utilities. Most of them run from my local disk, but a few run from the network. Can you shed any light on the HPFS-to-FAT translation for non-OS/2-based products?

A: To put it simply, your applications should not know the difference. OS/2 virtualizes system services for DOS programs, so they operate as if they were communicating with the hardware (or the disk) directly. They are actually going through OS/2 system services. This explanation applies to devices as well as disk files.

On a FAT or HPFS system, when a DOS program attempts to access a file, the request is intercepted by the OS/2 file system. Depending on what format the file is (HPFS or FAT drive), the request is passed to the appropriate OS/2 file system, which fulfills the request and returns the appropriate data. Your application can read and write files on HPFS drives as long as the files were not created by programs that create files with names longer than the FAT file-naming convention (8.3) or with characters that are unacceptable under DOS but not under HPFS. OS/2 intercepts all file-system requests from all programs, whether they are DOS or OS/2 programs, and passes the request through the appropriate file system. So, like hardware access, DOS programs are faked out by OS/2 and given more function under the covers than DOS can provide.

COMPAQ AERO

Q: I have a Compaq Aero notebook system. I experienced a variety of problems when I tried to install OS/2. For the most part, I get through the first part of the installation, but after rebooting, the floppy disk drive doesn't work. Do you have any suggestions?

A: In my contact with Compaq, I have learned that problems generally occur on the Compaq Aero 33MHz and sometimes on the 25MHz notebook systems. These machines do not have an integrated floppy disk drive, but a plug-in disk drive that connects to one of the PCMCIA slots.

What is happening is that the disk drive is not being set up as an external device during the boot sequence. If the boot device is the floppy disk drive instead of the hard disk, it is set up differently. When you first tried to install OS/2, the system booted from the floppy disk. In the second part of the installation, it booted from the hard disk. The floppy disk is not being set up properly by the ROM BIOS. The device setup is directly related to the speed of the machine, which is why the 33MHz machines will usually fail, but the 25MHz machines will fail only periodically.

This problem occurs in the ROM BIOS in the system. You can get a replacement by contacting Compaq product support. You need to get the "flash" BIOS update, level 11.01.94 or later. You can upgrade through software, so you don't have to pull chips. After you get the fix, you must also be aware that all drives are set up by the BIOS at boot time. So, because it is a detachable drive, if it is not present when OS/2 is booting, OS/2 will not be able to access it if you attach it later. If that happens, you will need to reboot. In addition, if the floppy disk drive is present at boot time but then removed and re-inserted, OS/2 will not be able to access it, because the floppy disk drive gets its power from the PCMCIA slot. If it is removed, it loses power as well as its setup information. If you plan to use this machine with a floppy disk drive, make sure that you install PCMCIA support when you install OS/2.

David Reich, a contributing editor to OS/2 Magazine and author of Designing High-Performance OS/2 Warp Applications has been with the OS/2 development team since 1987. David is interested in your questions and suggestions. Contact him at CompuServe 76711,632 or Internet speedracer@vnet.ibm.com.

End Notes cont'd from p. 72

with PM and Workplace Shell concepts and terminology. UIL exploits all the hairy features of C++, including the recent ANSI C++ exception-handling standards (a major coup for IBM, leaving Microsoft well behind). Be warned again that the authors expect you to follow reams of complex code unaided by any C++-specific tutorials.

Some readers may be disappointed by the authors' statement (page 473): "Unfortunately, enabling your objects to be fully integrated Workplace Shell objects is a daunting task, and telling you how to accomplish this is beyond the scope of this book." They do, however, present simple methods for achieving a very close integration with the Workplace. The whole arena of object-oriented user interface (OOUI) software development is in a state of flux for OS/2, Windows, Macintosh, and UNIX. Each platform has its evolving development tools and class-based frameworks. Whatever emerges in the strategic SOM/OpenDoc tussles ahead, it does seem that C Set++/UIL has given IBM a superior object-based foundation on which to build, not to mention the technological advantages of OS/2 itself. I highly recommend *OS/2 C++ Class Library—Power GUI Programming with C Set++* for all C++ programmers who want to develop applications for the growing base of OS/2 users.

Stan Kelly-Bootle started computing on EDSAC I at Cambridge over 40 years ago and has written at least 11 books. His "Devil's Advocate" column in UNIX Review has been running since 1984. His new book, *The Computer Contradiction*, will appear in the MIT Press Spring 1995 catalog. He welcomes e-mail via CompuServe 70323,1560 or Internet skb@crl.com.

RESOURCE:

OS/2 C++ Class Library — Power GUI Programming with C Set++ (\$36.95)

by Kevin Leong, William Law, Robert Love, Hiroshi Tsuji, and Bruce Olson.
VNR Computer Library
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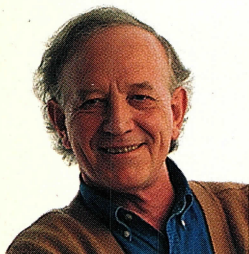


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Class Warfare

OS/2 C++ CLASS LIBRARY—

POWER GUI PROGRAMMING WITH C SET++. BY STAN KELLY-BOOTLE

My previous columns have been restricted to OS/2 publications for the general user. This month, though, unleashed by Alan Zeichick, my stern editorial handler, I sniff new ground by reviewing an OS/2 book that is aimed at experienced C++ programmers: *OS/2 C++ Class Library—Power GUI Programming with C Set++*, by Kevin Leong, et al. from VNR. If you are not a member of this targeted elect and feel tempted to skip my column, I urge you to reconsider. Although the book itself may not grab you, its subject matter is relevant to all sections of the OS/2 community.

OS/2 C++ Class Library—Power GUI Programming with C Set++ is an excellent combination of tutorial and reference for users who are resolved to master the OS/2 User Interface Library (UIL). It does not claim to cover every UIL function, despite its 879 pages, so you'll definitely need the full IBM reference documents to reach nirvana. Still, you will not find a more authoritative straight-from-the-horse's-mouth guide.

The first-named author, Kevin Leong, was the technical lead for the group of IBM systems developers who initiated the UIL project in Dallas in 1989. Leong's co-authors, Law, Love, Tsuji, and Olson, joined the team at various stages as UIL evolved into a formal IBM product. UIL shipped with C Set++ for OS/2 in 1992, providing much relief and improved productivity for the OS/2 programming community.

The prime goal of UIL was to simplify Presentation Manager (PM) programming by encapsulating PM in a C++ class library. Rather than struggle with the huge and arcane PM Applications Programming Interface (API), develop-

Although the book itself may not grab you, its subject matter is relevant to all sections of the OS/2 community.

ers could struggle with a huge and arcane hierarchy of classes. I'm only joking! In fact, for C++ developers, UIL not only offers a conceptually simpler model for writing PM applications, but promises the well-touted object-oriented programming (OOP) advantages of maintainability and reusability. Of course, you are free to mix UIL code with direct calls to the PM API, so it's not the end of the world for devout masochists.

As a simple example, if my non-programmer readers are still reading, consider the UIL class **IWindow**. It is a base class that prepackages all of the wonderful properties and actions that are common to all windows, for example moving, sizing, showing, hiding, grabbing and releasing focus, and so on. C++ lets you derive a specialist window class from **IWindow**—let's call it **IClaudius**. You inherit all the basic window goodies and need only add new members and/or override inherited members to create your very own **IClaudius** window class.

Once you have a window class, a simple declaration constructs a window

object (or instance) of that type and the user's screen is soon alive with spectacular tessellations. UIL offers many predefined classes that are derived from **IWindow**, such as **IFrameWindow** and **IControl**, from which hundreds of other useful window classes and subclasses are derived. For example, over 30 classes are derived from **IControl** or its children, including heavyweights like **IRadioButton** and **IComboBox**. The reduction in programmer grunt and sweat is self-evident.

In addition to the window classes, many classes and subclasses for event handling, exceptions, bitmaps, icons, fonts, help management, threads, strings, DDE (Dynamic Data Exchange), and much more are included. For each class, you need to know its member functions and data members, as well as how its objects interact with those of other classes. So, although UIL tames PM considerably, a tough learning curve remains—even for the skilled C++ programmer.

OS/2 C++ Class Library—Power GUI Programming with C Set++ progressively reveals the power of UIL by means of realistic program examples. The complete source code for all programs is supplied on a 3 1/2-inch disk. Each example is preceded by a general discussion of the key classes and followed by a detailed analysis of the code. Refreshingly, the first example is not a noddy "hello, world," but a delightfully risky program that displays its own source code in a multi-line edit control!

No prior knowledge of Presentation Manager is assumed, but it sure helps. Some crisp introductory chapters are included for readers who are unfamiliar

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